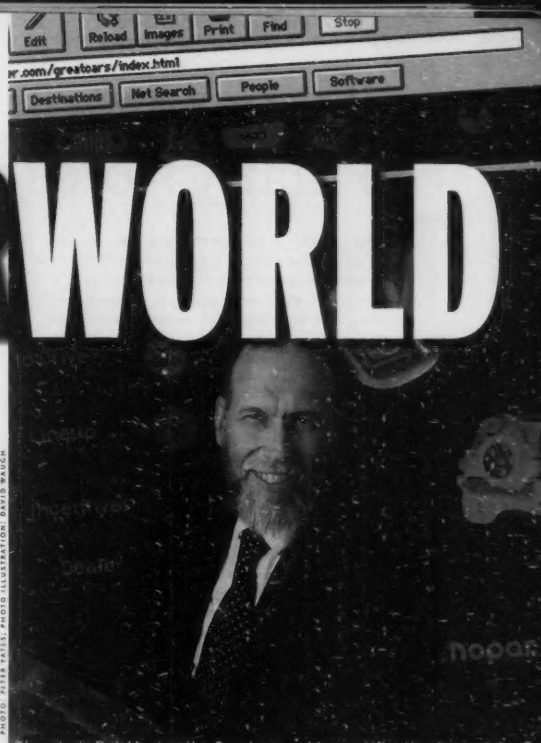




IS executives such as Jim Huckestein see potential in Internet-based training. Managing, page 63



Chrysler's Bob Moskowitz: Service provider certification is a must

# COMPUTERWORLD

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February 3, 1997 • Vol. 31 • No. 5 • 110 pages • \$3/Copy \$48/Year

## Lotus takes open road

► Users applaud move to open up Notes but warn migration requirements are no piece of cake

By Barb Cole  
Orlando, Fla.

NOTES HAS OPENED UP to the Internet.

And that's a mixed blessing for companies that have invested heavily in Lotus Development Corp.'s groupware platform.

Information technology organizations may face hurdles moving from the mostly proprietary design of today's Notes servers and clients to the World Wide Web-based vision Lotus detailed at Lotusphere 97, held here last week.

Users applauded the company's plans to open up Notes by adding support for an assortment of protocols.

Notes, page 12

### NOTES GOES TO PIECES

#### Server enhancements

- Java support
- Enhanced IMAP support

#### Client changes

- New Java-based Notes client for PCs and network computers
- A Notes client with support for a variety of protocols
- Notes and SmartSuite functionality can be incorporated into a new set of Java applets

► Infobus architecture to go head-to-head with ActiveX, Java Beans

By Barb Cole and Sharon Gaudin

LOTUS DEVELOPMENT CORP. is trying to give ActiveX and JavaBeans a run for their money in the component architecture race with a new Java-based technology.

The company is building software, dubbed Infobus, designed to pass data among Java applets, officials said last week. Java applets will be registered with Infobus, which will enable the applets to share information.

The technology could be used to link a spreadsheet applet to a chart applet so when information in the spreadsheet changes, the chart updates.

Infobus, page 103

## AOL debacle raises service quality fears

By Bob Wallace  
and Mitch Wagner

THINK OF THE nightmare experiences of America Online, Inc. and its hapless subscribers as the first shoe dropping.

The next to fall could be the Internet service provider that supplies the next shoe to drop. The next to fall could be the Internet service provider that supplies the next shoe to drop. The next to fall could be the Internet service provider that supplies the next shoe to drop.

Corporate users and industry

experts last week agreed that widely publicized schemes to provide Internet access to droves of new members increasingly threaten to swamp networks not designed to handle the strain.

And if America Online's recent predicament is a sign of things to come, those service providers could face formidable legal pressures as well (see story, page 14).

"It's the great Internet pyramid swindle," said Tom Nolle, Internet providers, page 16



**You're convinced that your way is the right way. But the overwhelming consensus among your IS peers is that their technology choice is the one that'll work. What's the best way to make your case?** Turn to **Managing** (page 70) for some tips on how to gently win over your colleagues.

## CIOs wary of year 2000 insurance

By Thomas Hoffman

BUSINESS DISASTER insurance for the year 2000 has arrived.

A handful of insurance companies last week began issuing year 2000 insurance policies. These are designed to cover unforeseen business disruptions that may result when systems are converted to handle the century date change.

Insurers including Marsh & McLennan, Inc. and American International Group, both in New York, and Minet, Inc. in London offer policies with \$100 million to \$200 million limits to Year 2000, page 103

### INSIDE THIS ISSUE

**GUARANTEED INTERNET SERVICE**  
UUnet sets new standard, promises 99.9% uptime. Page 2

**TALKIN' 'BOUT NEXT GENERATION**  
CA unveils new version of Unicenter management suite. Page 6

**NT domain pain**  
Users face directory dilemma with Windows NT 3.51, 4.0. Page 8

**IRS CONSIDERS OUTSOURCING**  
CIO lays out proposal to congressional hearing. Page 14

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13

## U P F R O N T

## Too many Notes

The best marketing messages are those that can be defined in just a few words: "Windows everywhere," "The network is the computer" or "Digital has it now."

By contrast, IBM/Lotus' strategy for Notes could fill a small briefing book these days. With customers still digesting the sudden transformation of Notes 4.5 into Domino 4.5: Powered by Notes, Lotus last week unleashed on the market three new desktop options for Notes users.

Keep in mind that until two years ago Lotus had only one Notes client. But as of today, it has eight: a Web browser, CC:Mail client, Webicator, Lotus Mail Java Edition, Lotus Mail, Lotus Notes Mail, Lookout and Notes Desktop.

At the same time, Lotus has redefined its application development strategy away from LotusScript and toward Java. But a full set of Notes application programming interfaces for Java won't be available until at least the end of the year.

## There are troubling signs of IBM disease

Confused? I don't blame you. In seeking to address as many of its customers' demands as possible, Lotus has thrown too many options into the market. This has been a chronic problem for Lotus, which has introduced and then killed a mind-bending number of products over the years. There are also troubling signs of IBM disease here in which users are given so many alternatives, they simply give up trying to make a choice.

The expanded desktop strategy went over well at Lotusphere last week, but that really isn't surprising. Lotusphere draws people whose devotion to Notes borders on fanaticism. Outside of that comfortable milieu, I suspect the Notes strategy will generate considerable confusion.

Faced with the prospect of having to manage four or five kinds of Notes clients, might an IS organization opt for a simple approach from another vendor such as, say, Netscape?

Paul Gillin, Editor  
Internet: paul.gillin@cw.com



## UUnet to offer uptime guarantee

► Will offer refunds if network availability is less than 99.9%

By Mitch Wagner

UUNET TECHNOLOGIES, INC. next month plans to offer a pioneering performance guarantee to customers, promising better than 99.9% availability of business-to-business and intranet services.

UUnet will refund up to a quarter of a monthly service fee if communications go down for about 43 minutes per month.

"Service guarantees are essential to us," said Joseph Gallo, vice president of corporate telecommunications at Automatic Data Processing, Inc. (ADP) in Roseland, N.J. ADP handles financial management and payroll processing for businesses. ADP plans to start using the UUnet service this month.

"When you're talking about investments and financial documents, timing is important. You have to know that the information is getting through," Gallo said.

Caroline Robertson, an analyst at International Data Corp., said, "This is a very important service, and UUnet is in a unique position — although it will probably be for a very short time." She said she expects other Internet providers to broaden their service guarantees.

But the UUnet guarantee has

## UUNET TECHNOLOGIES' EXTRANET SERVICE

UUnet offers a tiered pricing scheme that can "burst" to higher speeds during peak traffic

Service	Price per month
Burstable T1, 128K bit/sec. tier	\$1,700
Burstable T1, 512K bit/sec. tier	\$3,275
Burstable T3, 9M bit/sec. tier	\$18,900

some fine print. Most important, it doesn't apply to the Internet at large, only to sites that are connected to one another via UUnet so that traffic flows only on UUnet's own network. That network covers more than 300 locations in the U.S. and 500 in Europe and Asia.

And it applies only to locations connected in groups of 12 sites or more. For four to 12 sites hooked together in a network, the guarantee is for roughly 99.8% connectivity.

The reason the guarantee becomes weaker for fewer sites on a network is that more sites mean more possible paths between any two points on a network in case the connection between two sites goes down. (UUnet anticipates that users will find it less expensive to lease lines for networks of fewer than four locations.)

Still, the guarantee is more comprehensive than those offered by UUnet's competitors. Service level commitments were announced last summer, with

much ballyhoo, by BBN Planet, AT&T Corp.'s WorldNet and ANS Communications, a unit of America Online, Inc.

But those guarantees apply only to the vendors' network, not all the way to user premises, as the UUnet guarantee does. And the guarantees aren't verifiable by the user. The UUnet guarantees are checked by a device installed on the user premises, and that device can be accessed by UUnet and the user.

UUnet officials said the company can provide end-to-end guarantees because its parent company, telecommunications giant WorldCom Corp., can provide "local loop" connectivity — the wiring between UUnet's Internet point-of-presence and customer premises.

Pricing starts at \$1,700 per month for a "burstable T1" — meaning that data moves at 128K bit/sec. most of the time but can go in occasional bursts of up to T1 speeds, about 1.5M bit/sec.

## ThinkPad prices cut; new models on way

By Mindy Blodgett

TO MAKE WAY for new mid-range and low-end notebooks due next month, IBM PC Co. last week cut the prices of its ThinkPad 365 series laptops by \$200 to \$400.

The ThinkPad 365 models will cost \$1,799 to \$2,099, down from \$1,999 to \$2,499, for notebooks with Pentium processors that range in speed from 100 to 133 MHz.

Also last week, Intel Corp. cut OEM prices on its entire line of processors for desktops and laptops. That could trigger price cuts in other ThinkPad lines, including the high-end 760 machines, IBM officials said.

John Dunkle, an analyst at Workgroup Strategic Services, Inc. in Portsmouth, N.H., said the IBM price cuts continue

IBM's strategy, begun last year, to aggressively pursue the low end of the market.

Dunkle said the IBM and Intel announcements suggest a laptop price war may bubble up in the coming weeks.

IBM is cutting prices to clear out inventory and make way for new models, industry observers said. IBM sources said the company plans to release the follow-

ing notebooks next month:

■ A ThinkPad 365 model with a 133-MHz chip, 11.3-in. screen, 1.35G-byte hard drive and CD-ROM drive. It will cost less than \$3,000.

■ A ThinkPad 365 model with a 120-MHz chip and 1G-byte hard drive, costing less than \$2,000.

■ New ultraportable ThinkPad 560s that will cost less than \$3,000.

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\*A QUICK INTERVIEWING GUIDE FOR IS MANAGERS. Most information systems managers haven't had formal training on how to conduct an interview. When the time comes, they just wing it. Executive search consultant Lina Fafard offers some tips. (www.computerworld.com/careers)

\*NET TRAIN, NET GAIN? Some say Internet-based training is a growing industry. Is it time to take it seriously? Get the facts, plus additional online resources. (www.computerworld.com)

THE FIFTH WAVE  
BY RICH TENNANT

"I asked for software that would biodegrade after it was thrown out, not while it was running."



# Cisco to pull plug on 7000s

► Router users upset as vendor pushes 7500 line

By Bob Wallace

SOME CISCO SYSTEMS, INC. users were caught off guard last week after the company announced that in six months it will stop selling its popular 7000 series of routers in favor of more-advanced 7500 models.

Cisco launched an upgrade plan that will give users 35% of their 7000 price tag as a credit toward the purchase of 7500s.

The two 7000 models cost \$11,900 and \$19,900. A base-model 7500 costs from \$10,900 to \$28,900. The 7500s process far more packets per second, have more and higher-speed interfaces and can support advanced networking schemes such as Cisco's Tag Switching.

## THIS JUST IN ...

Cisco replaces 7000 router line with the 7500 family

### Bad news

- Will stop selling and enhancing the 7000 in six months
- Only spare parts will be available indefinitely

### So-so news

- Will offer users a credit equaling 35% of what they paid for the 7000 toward a 7500

### Good news

- Plans new models of the flagship 7500, along with many new interfaces

Since the 7000 series debuted in 1993, Cisco has sold thousands of the routers, which were superseded by the 7500 more than a year ago.

The forced march to the 7500 angered some longtime users.

"This is absolutely outrageous," said Bill Horst, director of Federal Telecommunications Services at the General Services Administration (GSA) in Boston. "They're so far ahead of themselves with product life cycles that they don't seem to care how they leave large numbers of users."

Horst uses two 7000s, and he estimated that the GSA has more than two dozen more. "A 35% credit is not going to cut it with most IT

budgets," Horst said.

Kevin Flynn, a product manager at Cisco's Core business unit, said the company will provide spare parts indefinitely for the 7000 series. But he added that "enhancements for the 7000s won't be happening."

## ANGRY USERS

Other users are seeing red, too. "It doesn't sound like they're going to do anything beyond provide me what I need just to keep these boxes running," said Tom May, a senior network engineer at Cable & Wireless Communications, Inc. in Tysons Corner, Va., which has two 7000 routers.

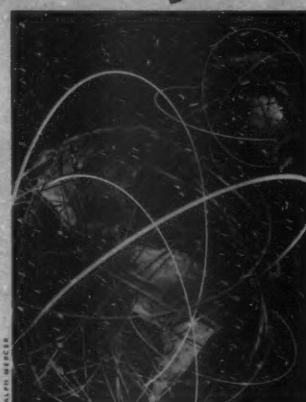
Another Cisco user said Cisco has its priorities mixed up. "They're trying to soften their price positioning [with the upgrade plan] to lessen the impact, but I'd really rather see them work on engineering backward compatibility," said Steve Clark, director of network services at United States Cellular Corp. in Chicago, which has several 7000s.

The phaseout of the Cisco 7000s is of particular concern to large users because this once top-of-the-line router is often used to anchor enterprise-wide data networks. "This upgrade would be a major undertaking for us because we would need to have our staff analyze the potential impact of adding a brand-new router to every other router in our entire data network," Horst said.

"We would need to have our staff analyze the potential impact of adding a brand-new router to every other router in our entire data network," Horst said.

**& Add-on to Cisco midrange routers cuts WAN link support costs. Page 51.**

# Rating the net vendors



Computerworld surveyed 1,669 customer sites and found:

- Users overall are fairly satisfied with their networking suppliers.
- Vendors of WAN equipment and network interface cards scored best.
- Novell E-mail users are happier than Lotus Notes and CC:Mail users.
- AT&T wins in WAN transmission.

For the complete rundown of our findings, see our Buyer's Guide, page 73

# Microsoft unwraps Visual Studio 97

By Sharon Gaudin

MICROSOFT CORP. last week said it will unveil on March 19 a single development environment designed to let programmers build applications with multiple languages and tools [CW, Dec. 16].

In formally announcing the new environment, Microsoft said Visual Studio 97 was designed to save developers time by providing a common class library and interface and eliminating the need to move from one environment to another to use different tools and languages. It also is expected to reduce the need to train developers in multiple languages and increase component reuse.

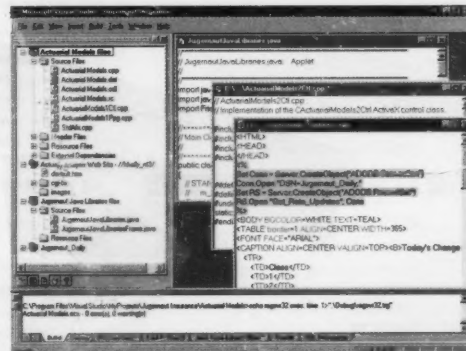
"For anybody who's exclusively a Wintel developer, this would be a really nice environment to work in," said Larry Hagerty, head of information systems at GTE Data Services in Tampa,

Fla. "When you have to learn different interfaces to different environments, it just slows you down. A single interface, in terms of productivity alone, would be worthwhile."

Developers often use three or more languages and tools, each

with its own environment, to build an application, so a developer must know several languages or work on a team.

Using Visual Studio 97, an application written in C++ can be altered in Visual Studio using Visual Basic, for example.



Visual Studio lets developers work with multiple languages

# Thin clients become a budget reality

By Stewart Deck

NETWORK COMPUTERS are more than a corporate wish. They are quickly becoming a line item in corporate budgets, according to a forthcoming study.

The Yankee Group, a research firm in Boston, found that 17% of senior information technology managers and chief information officers at the Fortune 100 companies surveyed have

money set aside to purchase network computers this year, and 65% plan to lay out cash for network computers by the end of next year.

"Over the past several months, the thin [network computer] vs. fat client controversy has come to a rolling boil," said Brian Murphy, director of client/server computing at The Yankee Group.

"This study shows that the [network computer] platform

has attracted not only a lot of attention, but also real budget dollars," Murphy said.

But at least one information systems manager's enthusiasm has been kept at bay by what he sees as the opportunistic profits that vendors are looking to reap from early adopters.

## PRICE HIKES

"The technology isn't that far down the line, and already manufacturers have driven up the

price point by 50%," said Christopher J. Macmanus, senior vice president of IS at CareGroup, Inc., a Boston-based holding company for seven hospitals in New England.

But even if the price point for network computers doubles within the next year or two, "it's still a darn sight cheaper than workstations," Macmanus said.

Macmanus said his company eventually may use network computers within CareGroup's clinical outpatient centers, where centralized applications "are reasonably well controlled."



**THE PROGRAMMING PROBLEM:** Richard W. Hamming writes that training, not technology, will improve software. In Depth, page 77



**FILLING ORDERS?** Gwen Babcock's small pillow company finds comfort in quick SAP R/3 installation. Corporate Strategies, page 61

## In this issue

### NEWS

- 6 Shaky platform?**  
HP enhances the HP 3000; long-term plans for the platform are still in doubt.
- 12 Revamping the legacy**  
IBM will add Notes Web-serving abilities to mainframes and midrange machines.
- 14 Taxing capacity**  
Report says revamped IRS tax system still fails to deliver on upgrade promises.
- 17 Peer networking**  
Recruiters find that bringing IS staff along on the hunt can help bag talent.

### OPINION

- 33 Don't just support business**  
Burgeoning electronic-commerce model means IS will be the business, John Gantz says.
- 105 Palming it off**  
The latest crop of palmtops makes David Coursey WinCE.

### TECHNICAL SECTIONS

#### SERVERS & PCs

- 41 Printing users**  
Fingerprint scanners are improving security for some hospital and financial users.
- 41 Big disks**  
PC disk-drive storage capacity will double this year, and costs will drop.

#### SOFTWARE

- 45 Empty tool box**  
Lack of strong Domino management tools pushes Notes users to third parties.
- 45 Crowded warehouse**  
Users' demand for access to data warehouses strains budgets and managers.

#### THE ENTERPRISE NETWORK

- 51 Standard or not?**  
Rmon2 is finally finalized, but the best tools are still proprietary.
- 51 Router builder**  
Cisco add-on cuts per-port costs by two-thirds and adds dial-up capability.

### THE INTERNET

- 57 Helping users**  
Internet-based travel services save time but won't replace human agents.
- 57 Smart browsing**  
Intelligent agents could save browsers time and ease strain on servers.

### CORPORATE STRATEGIES

- 61 Banking on IS**  
In some bank mergers, it's the technology, not the business, buyers crave.
- 61 Java flunkies**  
Think you know Java? More than 50% of applicants flunk the certification test.

### FEATURES

#### MANAGING

- 68 All work? No play!**  
Leilani Allen explores what an IS manager can do when an office romance interferes with work.

#### BUYER'S GUIDE

- 73 Customer Satisfaction Quarterly**  
Users say networking hardware vendors have the edge over software vendors.

#### CAREERS

- 82 Killer questions**  
Probing questions can kill the hopes of interviewees. Hiring experts offer tips.
- 83 Wanted: Networkers**  
The demand for networking skills is vastly outpacing supply.

#### MARKETPLACE

- 97 Product review**  
IBM's Wake-on-LAN remotely rouses sleeping clients.

### ETC.

Company index	102
Editorial/Letters	32
How to contact CW/Subscriptions	106
Inside Lines	106
Stock Ticker	101

# Wintel challenge spurs major Unix price cuts

By Jaikumar Vijayan

VENDORS OF RISC Unix workstations are in the fight of their lives.

Competition from increasingly powerful, comparatively inexpensive Intel Corp.-based Windows NT workstations at the low-end is forcing Unix vendors into a series of defensive moves that are giving users higher performance at reduced prices.

The latest price cuts came from Silicon Graphics, Inc. (SGI), which last week dropped the price of some of its workstations by up to 22%.

This is the second major pricing move by the company in the past three months. SGI's cuts follow by a week those announced by Hewlett-Packard Co., which rolled back prices as much as 42% on its line of Unix workstations.

Digital Equipment Corp. and Sun Microsystems, Inc. also have made dramatic price cuts in the past few months.

Since SGI fired the first shot in November, average prices for Unix workstations have come down by about 30%. Unix vendors are repacking high-performance features into entry-level configurations. Prices start as low as \$6,500.

Meanwhile, low-end Intel boxes have entry prices that hover between \$3,500 and \$4,500.

Unix vendors' aggressive moves bring RISC systems prices much closer to configured Wintel workstations, but they are unlikely to more than slow Windows NT in the low end, observers said.

"We are admittedly Unix bigots here, but there is no doubt that NT is cheaper. It is one of

the factors driving us there," said Matt Fahrner, director of networking at Burlington Coat Factory Warehouse, Inc. in Etna, N.H. The company, which has more than 400 Sun workstations installed nationwide, has recently begun to purchase Windows NT workstations.

### UNIX FALLS PREY

Wintel platforms are "an alligator chasing Unix vendors," said Andrew Allison, editor of "Inside the New Computer Industry" newsletter in Carmel, Calif.

Allison said shipments of Unix on RISC workstations declined between 5% and 10% last year. International Data Corp. in Framingham, Mass., estimated that revenue from Unix workstations fell from \$12.1 billion in 1995 to \$11.4 billion last year.

"Unix vendors need to be able to provide some value-add to their products" to justify any cost differential over Wintel platforms, said Rich Partridge, an analyst at D. H. Brown Associates, Inc. in Port Chester, N.Y.

That is because at the low end, at least, Wintel boxes quickly are catching up with their RISC/Unix counterparts in areas such as raw processor performance, I/O capabilities and bandwidth.

Unix vendors still have the crucial edge when it comes to graphics capabilities. But a growing supply of relatively cheap graphics cards from vendors such as Intergraph Corp., S3, Inc. and 3dlabs, Inc. could narrow that gap soon.

"And the variety of choice in terms of [office] applications available on Windows also makes it difficult for us not to go in that direction," Fahrner said.

### FREE FALLING

A sample of recent price cuts on entry-level Unix/RISC workstations

Company	Model	Previous price	New price	Percent change
HP	B132L, 64M bytes RAM, 2G-byte disk	\$11,500	\$6,975	41%
Digital	Alpha 255/300, 64M bytes RAM, 1G-byte disk	\$13,880	\$9,995	28%
SGI	02 R10000 175 MHz	\$17,995	\$14,495	19%



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# No face-lift for HP 3000

► 64-bit support not in the cards

By Jaikumar Vijayan

IT WAS MORE of the same old, same old, for the HP 3000 faithful last week.

In its annual video broadcast, Hewlett-Packard Co. announced some incremental upgrade plans while dishing out its usual statement of support for the 25-year-old proprietary minicomputer line.

But once again, it stopped short of guaranteeing the kind of future microprocessor and 64-bit support that sections of its user, reseller and software vendor base are looking for.

"This doesn't change anything for people who think the 3000 is in trouble," said Ron Seybold, editor of "The 3000 NewsWire," a newsletter in Austin, Texas. "And it doesn't change anything for people who think it isn't."

The HP 3000 is one of HP's oldest — and most profitable — minicomputers. It is relatively small, but its small and enthusiastically loyal user base has kept lapping up the systems, mainly because they are reliable and

easy to use and upgrade.

But the move to cheaper and more open systems — particularly Unix — has resulted in a gradual erosion of the user base, fading channel and independent software vendor interest and a perceived lack of interest on HP's part.

"It doesn't matter whether they are putting a lot of support behind it or not. There is nothing that HP can do to the 3000 to make me change my mind" about migrating away, said longtime HP 3000 user Lee Perry, systems development manager at Avery Dennison in Bowmanville, Ontario.

"All the applications I am looking at run only on Unix anyway," he explained.

But many of the faithful are keeping the faith.

"In our case, at least, HP has been doing precisely what we need" on the HP 3000, said Bard White, chief information officer and worldwide director of Spalding Sports Worldwide in Chicopee, Mass. That includes HP's recent introduction of the much faster PA 8000 chips and

support for better interoperability with Unix environments.

In its address to customers last week, HP again promised evolutionary improvements, including year 2000 fixes, in the next version of the MPE operating system due later this year. It will contain support for high-speed 100Base-T and 100VG/AnyLAN networking by summer.

## FUTURE PLANS

Down the road, HP also promised to include support for next-generation PA-RISC chips and support for large 4-G-byte files in a version of the MPE operating system expected next year.

But the company said it has no immediate plans to include the HP 3000 in its Merced road map or to extend full 64-bit support for MPE any time soon. Merced is a 64-bit chip technology being jointly developed by HP and Intel Corp. that's expected in early 1999.

A commitment to Merced and full 64-bit support are being viewed as vital indicators of HP's long-term plans for the 3000 by some software vendors, resellers and users.



CA-Unicenter TNG's 3-D user interface lets administrators "fly" through their data centers and network topologies, which include maps of major cities such as Paris

## CA upgrades Unicenter; users remain cautious

By Craig Stedman  
and Patrick Dryden  
NEW YORK

COMPUTER ASSOCIATES International, Inc.'s shipment of a major CA-Unicenter upgrade sets the stage for a battle royale with IBM for enterprise management hegemony.

But it may take some time before either company gets a lot of users to enlist.

Nearly 75% of information systems managers will likely

### ENTERPRISE MANAGEMENT

continue tying together individual management tools for the next few years rather than bet their businesses on the end-to-end suites offered by CA and IBM's Tivoli Systems, Inc. unit, industry analysts said.

For example, Anderson Exploration Ltd. in Calgary, Alberta, looked at the original version of Unicenter but is sticking with the separate management tools that come with its Unix servers and databases. "That seems to suit our needs for the time being," said Gary Graham, staff database specialist at the oil and natural gas producer.

"There are all sorts of management fiefdoms that are gradually pushing together in the suites. But we're talking a multi-year process [for widespread adoption]," said Jonathan Eunice, an analyst at Illuminata, Inc. in Nashua, N.H.

Still, Eunice and beta testers of CA-Unicenter: The Next Generation said it goes far beyond earlier releases in letting users manage sprawling client/server networks from a single

control point.

CA-Unicenter TNG helps CA approach the level of end-to-end management that Tivoli is reaching with the TME 10 global enterprise manager it started rolling out in December.

Through agent technology built in to CA-Unicenter TNG, "we can be very predictive and proactive in dealing with situations that could cause system outages," said Patrick Burke, corporate vice president of information resources at NPC, a financial transaction clearinghouse in Louisville, Ky.

The CA software has helped NPC avoid any downtime on its 56 Unix servers in the past three months, he said.

Michael Jaslowski, senior project manager of technical support at Allstate Insurance Co. in Northbrook, Ill., said the company is looking to CA-Unicenter TNG to help keep management costs within reasonable limits as 60,000 PCs are rolled out to agents and claims personnel.

"We don't want to have a support person in every office. That's just not cost-effective," Jaslowski said.

CA-Unicenter TNG, which was first detailed in mid-1995, starts at \$2,500. Its agent technology can be used to automate alerts or management tasks. Other new features include a three-dimensional, game-like user interface (see photo) and the ability to set up management views by department or business

## MCI sounds out voice over the 'net

By Kim Girard

NETWORK MANAGERS EAGER to use combined voice and Internet data applications may soon find a way with services from MCI Communications Corp.

Using technology called Vault, MCI plans to unveil about a half-dozen services this year that promise better-managed intranet services, multimedia collaboration and faxing over the Internet.

Vault, a combined hardware/software architecture, will serve as the bridge between the Internet and the switched public telephone network, converting traffic into Internet Protocol packets that travel over MCI's Internet backbone.

Pricing hasn't been set for the new services.

Regardless of MCI's jump into this area, implementation of Internet-based telephone services will move slowly, said Bryan Van Dussen, a telecommunications analyst at The Yankee Group in Boston.

"Do I think we'll see a wind-

fall of voice over the Internet? No," he said.

MCI customer Tom Kitrick, strategic planning manager for capital markets technology at First Union Corp. in Charlotte, N.C., said he is investigating integrated voice and data to do collaborative work on the company's intranet.

"We're [located] all over the East Coast, and it would be terrific to have brainstorming with different groups while we look at different data," Kitrick said.

### BANDWIDTH COSTS

But adding new capabilities will largely depend on the cost of providing the bandwidth to support the company's 2,500 intranet users, he said.

MCI initially will use Vault for call center services to enable customers using a multimedia computer to speak to service representatives while viewing a World Wide Web page. AT&T Corp. and Sprint Corp. are also planning new Internet-calling applications that link Web users to Web site operators.

Tom Kent, senior director of telecommunications at Red Lion Hotels, Inc. in Vancouver, Wash., said MCI technology could help the company better coordinate reservations from a Web site. Currently, customers can send electronic mail to the hotel chain only after perusing basic information online, a system the hotel hopes to update this year.

"The problem has been how do you automatically make a reservation over the Web?" Kent said.

### Business uses for Vault

→ A traveling executive could return telephone calls and access messages from one Web site.

→ An editor could splice tape for the evening news while a producer watches from across the country, sharing voice and data.

→ Home buyers could research mortgage rates on a lender's Web page and click a voice button to talk to a salesperson.

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# Win NT domains bedevil users

► Some turn to competitors as they wait for Microsoft to ship better directory

By Laura DiDio

WHILE USERS wait for Windows NT Server 3.5 and its Active Directory to ship by year's end, they are forced to grapple with the complexities and limits of NT's current domain directory or shop elsewhere.

Domains are arguably the thorniest problem for users of Microsoft Corp.'s Windows NT 3.51 and Windows NT 4.0.

Windows NT Server sales haven't been affected, but many large organizations with thousands of users have shunned the domain directory altogether. Instead, they use products from rival companies.

The domain directory is a "sort of super workgroup, designed to give administrators a single, centralized list and control of user accounts and security. And it gives end users a single log-on," said Mark Minasi, president of Tech-Teach International, Inc. in Arlington, Va., and author of *Mastering Win-*

dows NT 4.0. "But that's as far as it goes. It's very difficult and cumbersome to make Windows NT domains interact smoothly."

Bill Sheehan, a senior technical support specialist at Stone & Webster Engineering Corp. in



**Scott Rackliffe:**  
Domains were the hardest part of the NT Server rollout at Farm Credit Financial Partners

Boston, said he avoids NT domains like the plague. "They're fine for small networks. But when you have to administer multiple servers in multiple locations, forget it. You spend your entire life assigning trustee rights and trying to figure out how to build relationships among the various Windows NT Servers," he said.

Ten other users told *Computerworld* that Windows NT domain name servers (DNS) lack the enterprise functionality of Banyan Systems, Inc.'s StreetTalk or Novell, Inc.'s Novell Directory Services (NDS). Under the existing domain directory model, administrators can view resources only within a single

domain.

NT domains are also labor-intensive because all changes to the domain structure must be done manually. By contrast, NDS and StreetTalk automatically replicate and propagate the directory tree structures and updates across the enterprise.

"I use and love Windows NT Server, but I have no desire to use their domains. They are an exercise in self-flagellation," said Tony Macaluso, director of information technology at Multicare Cos. in Hackensack, N.J. It uses StreetTalk for Windows NT as its directory because it needs only one network manager for 3,000 users at 60 sites.

"If we were to use the built-in DNS in Windows NT 4.0, we'd need at least five dedicated administrators," Macaluso said. That savings more than offsets the cost of StreetTalk.

## DOMAIN PAIN

Scott Rackliffe, vice president of information systems at Farm Credit Financial Partners, Inc. in Agawam, Mass., agreed that domains are an administrative headache. "Configuring them was the most technically challenging aspect of our recent

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  - Rick's Windows NT Info Center - Home Page  
[www.athenac.com/rick/nt/whatsnt.html](http://www.athenac.com/rick/nt/whatsnt.html)
  - Windows NT Resources on the Internet  
[www.lantug.org/NTweb/internet.html](http://www.lantug.org/NTweb/internet.html)
  - The Windows NT Information Network Directory (from A to V)  
[www.ime.net/peteb/nt\\_toc.htm](http://www.ime.net/peteb/nt_toc.htm)
  - Worldwide Association of NT User Groups  
[www.ntpro.org/wantug/memberlist.asp](http://www.ntpro.org/wantug/memberlist.asp)
- To access these and other links, go to: [www.computerworld.com/news/97013links.html](http://www.computerworld.com/news/97013links.html).

Windows NT Server rollout," he said. "Even with lots of advance planning, it still took us a while to get it right. I can't wait for the Active Directory to ship."

Adding to user woes is mistakes in domain name configuration that could mean a firm has to totally reinstall NT.

Mike Fink, chief technology officer at Syston, Inc., a systems integrator in New York, said most of his firm's Fortune 500 clients use NDS and are sticking with it "because it's fully automated, more robust and scalable. And that translates into fewer support dollars needed to maintain the enterprise."

Not so, said Mike Nash, Microsoft's director of marketing for Windows NT Server, and product manager Jeff Price.

They maintained that Windows NT 3.51 and 4.0 are suitable right now for use in large organizations.

"The complexity of managing a multidomain environment does take time and planning. If you try shortcuts, you may make more work for yourself. You want to get it right the first time," Price said.

Dean Johnson, a senior technical specialist at Freudenberg/NOK General Partnership, an auto parts manufacturer in Bristol, N.H., said his company will put Windows NT domains to the test. "Our decision to migrate to either Windows NT 4.0 or NetWare/IntraNetWare will hinge on which gives us the most efficient directory services," Johnson said.

## S H O R T S

### AT&T wins \$5B contract

In one of its biggest communications deals ever, the U.S. Department of Defense has awarded a \$5 billion contract to a corporate team led by AT&T Corp. The team, which includes several regional Bell operating companies, GTE Corp. and Time-Warner Communications, Inc., will install equipment at domestic military bases to transmit secure voice, data and video information globally.

### Equifax's year 2000 costs

The cost of solving year 2000 software bugs is beginning to show up in quarterly earnings reports. Equifax, Inc. said recently that year 2000 expenses knocked 1 cent off its earnings per share for the fourth quarter ended Dec. 31. The Atlanta-based credit information company also predicted year 2000 costs will continue to sap 4 to 5 cents per share in earnings each quarter this year.

### Judge nixes IBM deal

A New York State Supreme Court justice last week ruled invalid an \$85 million information systems outsourcing contract awarded last month by Westchester County to IBM. Justice Nicholas Colabella said the New York county's board of legislators needed to appropriate the money for the outsourcing work. County executive An-

drew O'Rourke turned over the bulk of the county's IS operations to IBM under a seven-year contract [CW, Jan. 27]. O'Rourke has seven days to request an appeal. An IBM spokesman said the company will continue to provide IS services to Westchester County at least until today.

### Oracle rebuts Informix

Oracle Corp. last week said a Jan. 23 lawsuit filed against it by Informix Software, Inc. was "baseless." Informix charged Oracle with unfair competition and stealing trade secrets after Oracle hired away 11 database engineers from Informix's Portland, Ore., laboratory. In its response, Oracle said it "has absolutely no interest in Informix trade secrets" and had warned the former Informix workers not to bring any proprietary information with them.

### Tool monitors frame WANs

Cabletron Systems, Inc. this week will introduce a special tool that lets wide-area network managers monitor the availability and performance of individual frame-relay circuits. Integrated with all-purpose Spectrum network management software, Spectrum Frame Relay Manager can help network managers who need more timely information about their subscribed service. The Rochester, N.H., company said it expects to ship the tool by April 1.

### Digital ships Pentium Pros

Digital Equipment Corp.'s PC business unit this week will launch a new line of aggressively priced 180- and 200-MHz Pentium Pro servers. The Priors XL 6000 series, which starts at \$2,500, has an entry-level configuration that features 32M bytes of RAM, 2GB-byte hard disks, Ultra Wide SCSI and a 12-speed CD-ROM. A higher-end Priors MX 6200, with support for two processors, starts at \$3,500.

**SHORT TAKES** Wang Laboratories, Inc. in Billerica, Mass., last week said its earnings dropped 35%, to \$4.5 million in the fourth quarter. Wang also said it will sell its software unit to Eastman Kodak Co. in a \$260 million deal. ... Client/server software vendor The Baan Co. posted year-end profits of \$36.3 million, a 58% increase from the \$15.3 million earned the previous year. Revenue for the year was \$388 million, up 79% from the \$216.2 million for 1995. ... Plagued by losses, General Magic, Inc., a Sunnyvale, Calif., Internet software provider, said it has cut its workforce to about 138 employees from about 187 regular and contract workers. ... German software giant SAP AG posted year-end profits of \$365 million, up 40% from the \$146 million for 1995. Revenue for the year was up 38%, to \$2.39 billion from \$908 million in 1995. SAP released its results in deutsche marks; U.S. dollar amounts are based on the Dec. 31, 1996, exchange rate of \$1 U.S. dollar per \$1.5548 deutsche mark.



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# RSA stunt shows up encryption weakness

► Graduate student cracks 40-bit code in 3.5 hours

By Sharon Machlis  
SAN FRANCISCO

HOW GOOD IS THE 40-bit encryption technology U.S. software companies are

allowed to export without a key-recovery plan?

Last week, it took a graduate student at the University of California at Berkeley just 3.5 hours to crack.

Hoping to prove the inadequacy of 40-bit keys, RSA Data Security, Inc. in Redwood City, Calif., issued an Internet challenge: Try to decipher 13 encrypted messages for a chance to win prizes of up to \$10,000. Using the power of about 250 idle workstations at the university,

Ian Goldberg solved the 40-bit encryption challenge in a few hours.

The coded message was, "This is why you should use a longer key."

But Paul A. Strassmann, professor at the School for Information Warfare in Washington, said the challenge's clues, such as word and key sizes and several decoded words, ordinarily wouldn't be available to potential hackers. This raises questions about the results, he said.

The stunt is the latest salvo in a long-running battle between the software industry and the U.S. government over encryption export policy.

The debate is between those who say strong encryption is vital to protect critical business from hackers vs. government officials who fear strong encryption will allow terrorists and other criminals to escape detection.

Encryption software with keys up to 56 bits long can be exported, provided a software company submits plans for a key-recovery scheme.



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### ENCRIPTION POLICY

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- Voluntary use of key recovery in the U.S.
- Mandatory use of key recovery with strong encryption overseas

#### What the industry wants:

- Strong encryption without mandatory third-party access to code keys
- Ability to export strong encryption
- Similar standards for domestic and overseas encryption policies

Law enforcement faces "extreme danger if there's not workable key recovery," Edward J. Appel, director of counterintelligence programs at the National Security Council, told the RSA Data Security conference held here last week.

Legislation will be reintroduced in Congress this year to allow the export of encryption that's available overseas from other sources, said U.S. Rep. Robert W. Goodlatte (R-Va.).

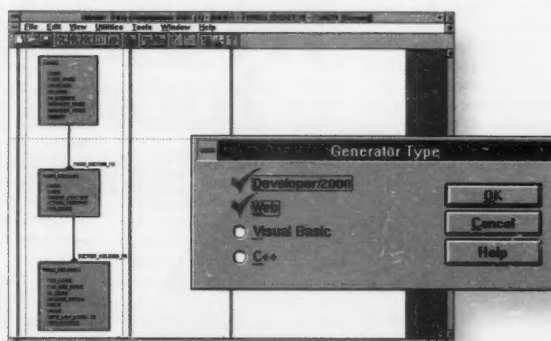
Industry executives called the latest "easing" of encryption export restrictions confusing and little more than a sham.

David Aaron, the Clinton administration's encryption czar, emphasized that the administration's latest directive shifted oversight of encryption exports from the U.S. Department of State — where encryption was treated as a "munition" — to the U.S. Department of Commerce.

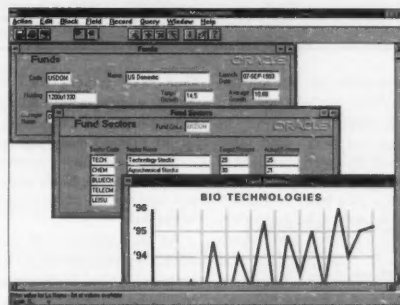
But Jim Bidzos, RSA president and CEO, said the new policy specifically prohibits encryption technology from enjoying the chief benefit of Commerce Department jurisdiction: the ability to get an export license if a foreign competitor has a similar product on the market.

# Generate Web and Client/Server Applications

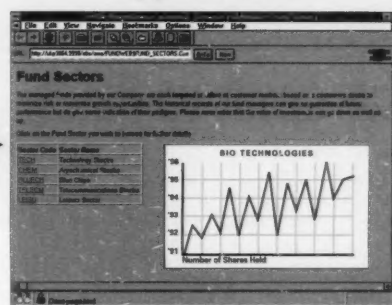
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## LOTUSPHERE 97

# Domino lines up midrange, mainframe server support

By Tim Ouellette  
ORLANDO, FLA.

IBM'S MAINFRAME and midrange servers will join the groupware game later this year by natively supporting Lotus Development Corp.'s Domino server.

The move will give Domino users a way to consolidate servers and safely scale up their groupware networks while providing S/390 mainframe and AS/400 midrange shops with Domino's TCP/IP-based Internet and intranet capabilities.

## PUNCH LIST

But users said IBM must improve TCP/IP support, specify mainframe pricing and deliver migration tools before they unplug their PC-based Domino servers in favor of the high-end systems.

Users have traditionally run Domino and Notes on multiple workgroup servers, which require many support people to

maintain and upgrade.

With the native version of Domino, S/390 shops can run existing Domino programs and bolt new Domino front ends on to their mainframe data-intensive applications.

For example, Louisiana State University (LSU) plans to get rid of its mainframe-based electronic-mail system and write applications that will let its 30,000 users access S/390 data — such as grades, financial aid status and class lists — via Domino, said Cindy Hadden, director of administrative information systems at LSU.

"We are not getting any new staff to deal with these changes," she said.

Porting Domino applications to the OS/390 will require replicating the programs and databases from the old servers, a basic Domino feature.

The Domino play is just part of IBM's S/390 unit's effort to fuel the mainframe revival by getting major application pack-

ages ported to the platform.

"If the price is right [on the S/390], like \$20,000, I would buy it up," said an IS manager at a West Coast auto company.

But if the price is higher, users might not go for it, he said. Analysts said low-cost Windows NT Servers, even if they require large support resources, soon will become a major rival to AS/400 and S/390 systems.

## SUPPORT CONCERNS

Other users voiced concerns about TCP/IP performance on both platforms, the lack of SNA support for the S/390 Domino product and a possible desktop reconfiguration nightmare when thousands of users have their primary servers changed to either S/390 or AS/400.

IBM officials said the company will deal with that last concern through migration tools, so users don't have to change each desktop to point to the S/390 instead of the former server.

IBM's plan to simplify Domi-

## AS/400 wades into mainstream

IBM is tweaking the AS/400 to make it more receptive to 32-bit Windows clients and its network computer.

The moves come as IBM tries to make the AS/400 a mainstream server and combat user concerns about Client Access for Windows 95, its existing AS/400 connectivity software.

Specifically, IBM said it will do the following:

■ Ship in February an updated version of Client Access for Windows NT/95, its PC-to-AS/400 access software.

■ Ship Operations Navigator, software that lets users administer an AS/400 from a Windows NT interface.

■ Add software for managing network computers attached to the AS/400. The software will handle hardware configuration, Internet connections, start-up applications and terminal-emulation sessions.

The network computer features will simplify the use of IBM's Network Station as a replacement for existing 5250 dumb terminals or expensive PCs that run terminal-emulation software. Similar Network Station features will be added to servers that run Windows NT, OS/2 and OS/390 this year.

Tom Bittman, an analyst at Gartner Group, Inc. in Stamford, Conn., predicted that IBM's Network Station will have a positive impact on the sale of servers, such as the AS/400, because IBM can bundle Network Stations and the management software with the AS/400 to provide a more attractive deal. — Tim Ouellette

no's move to the high-end platforms includes the following:

■ The next upgrade to OS/390, due next month, will include a complete rewrite of the operating system's TCP/IP support.

■ The AS/400 will support Domino file formats natively in its Integrated File System.

■ IBM will port the Lotus Mes-

saging Switch to OS/390 to ease E-mail system integration and migration.

IBM will ship beta versions of Domino for OS/390 by midyear, with product shipments by fall. The AS/400 beta is slated to be released late this year, with delivery for RISC-based systems planned for early next year.

# Lotus opens up Notes

CONTINUED FROM PAGE 1

ment of Internet server protocols. Users also said they liked the line of Java-based clients

that Lotus is slated to release by year's end.

But officials at seasoned Notes shops also said trans-

forming their Notes infrastructures to exploit those wares will require a lot of work. They will have to refocus the Notes application development team around Java, redesign some Notes applications to run on the Web, beef up application security and possibly tweak their server topologies.

"We have to think about Notes in a whole new way," said Patrick Calnan, a consultant at Electronic Data Systems Corp. in Southfield, Mich. EDS is working with several large companies to adapt their Notes networks to support Web hooks.

## JAVA JOLT

A group of IT executives at Countrywide Home Loans in Calabasas, Calif., said they left Lotusphere feeling as if they had a lot of work ahead of them. Countrywide runs a 7,000-user Notes network.

"This is a wake-up call to learn Java," said Phil Usher, senior vice president of the company. Most Notes experts build custom applications by using a combination of LotusScript and the C programming language.

"Lotus gives you the impression that you can just port your existing applications over to Java, but you can't," said Keith Cleveland, first vice president of messaging at Countrywide.

On the plus side, Java developers are likely to be more plentiful, less expensive to hire and easier to train than Notes developers, he said.

Notes skills traditionally have been hard to come by and are increasingly in short supply.

Application design also will change for companies that move to Lotus' Domino, the Web-enabled version of Notes, users said.

"If an application was written to be run on an internal network, you can't just extend it to the Web because you'll probably be exposing too many of your business processes to the outside world," Usher said.

## ARCHITECTURE ISSUES

On the infrastructure side, Notes shops may have to rethink their server architecture in the coming year.

For example, they may have to separate their mail servers from

their Web servers, said Alan Baren, a groupware and Internet strategist at Coopers & Lybrand, a large Notes shop.

Users said most companies, whether they are Notes shops or not, will feel the pain of moving to the Web.

As early adopters of groupware, they said they are in a better position than their compatriots who haven't built a message-driven application infrastructure.

"At least we have the Notes information stores that can be turned into Web content, and developers who understand groupware," Baren said.

Meanwhile, Lotus is getting high marks for its efforts to ease the migration and for not forcing users to the Web. The company is embracing Java, but it will continue to market LotusScript.

"There's a lot in Domino and more to come, but you don't have to implement it all at once," Baren said. "Companies that want to build Web applications today can, but you are not required to make every server a [Hypertext Transport Protocol] server."

## Domino builds its client base

Lotus customers soon will have a lot more client options for Domino.

The company's plans, detailed last week at Lotusphere, call for an assortment of clients that range from stripped-down electronic-mail front ends to interfaces for groupware applications.

The company demonstrated Lookout, a new client that has integrated mail, calendaring and task management and is aimed squarely at Microsoft Corp.'s Outlook.

Lotus also showed off Maui, a later version of the integrated client that supports Internet Message Access Protocol 4 (IMAP4) and Lightweight Directory Access Protocol (LDAP). These clients will ship in the first half of the year and in the fourth quarter, respectively.

Other new clients include the following:

■ Lotus Mail, which looks like CC:Mail but supports the Internet's Post Office Protocol 3 and Simple Mail Transport Protocol. It is due in the fourth quarter and will cost \$35.

■ Lotus Mail Java Edition, which is Lotus Mail for network computers. Pricing wasn't available.

Besides its Internet-ready clients, Lotus outlined plans to add support for LDAP, IMAP and the Internet Calendaring Access Protocol in its Domino server by year's end. — Barb Cole

# Monkey on your back #28: How to turn your PCs into real Windows NT® clients without really turning your PC users off.



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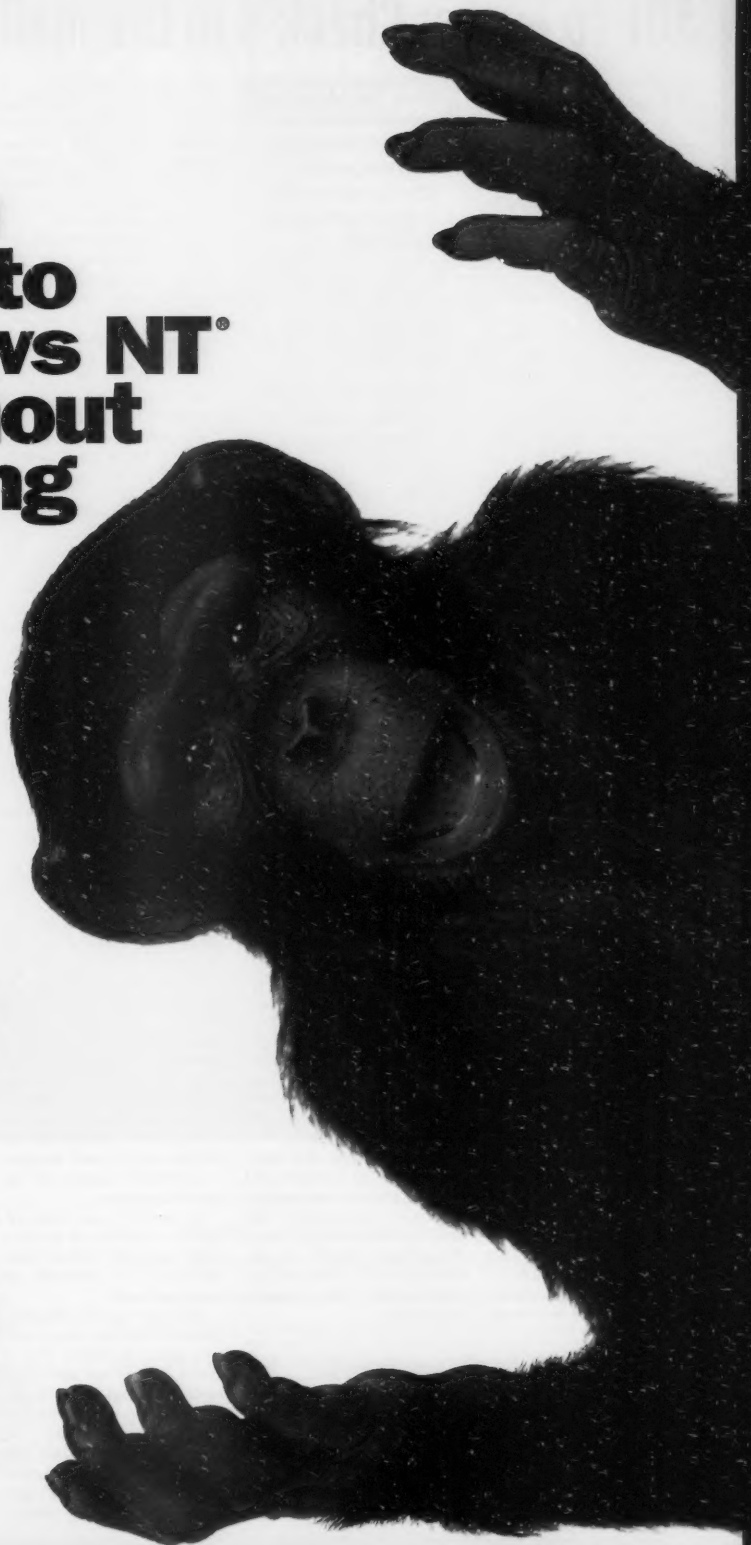
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# AOL to users: Check's in the mail States propose fines for overloaded 'net service

By Stewart Deck  
and Patrick Thibodeau

AMERICA ONLINE, INC. and 36 states have hammered out an agreement to provide steamed users with total or partial refunds of service fees for the past two months, during which subscribers have had difficulty connecting to the service.

The agreement also calls for America Online to pull all its advertising for the month of February and to provide written reports regarding its compliance with the pact.

"This agreement addresses consumer concerns that they didn't receive what they had paid for," said Todd Stone, Florida's assistant attorney general. "We believe this is an excellent [agreement]."

America Online agreed to the following:

- It will offer full or partial refunds of December and January charges for subscribers to its \$19.95 unlimited service. Subscribers who used the service for less than two hours in that period can get a full refund. A 50% refund will go to those who could log on for only two to eight hours, and a 25% refund will be granted to subscribers

## AOL'S SYSTEM IMPROVEMENT PLAN

- Increase investment in system capacity to \$250 million from the previously announced \$350 million.

- Increase modem capacity by 75%. America Online now has 200,000 modems.

- Hire an additional 600 customer support representatives over the next six months, bringing the total to 4,500.

who could connect for only eight to 15 hours.

- It will set up additional ways for subscribers to cancel their service: A toll-free number, (800) 827-6364; a fax number, (801) 622-7469; and a post office box will be set up immediately to handle cancellations.

- The online service will report back to the states in writing every month for the next four months, indicating its compli-

ance with the agreement.

- It will cease any advertising designed to attract subscribers during February. Only "mail solicitations already contracted for" and television ads that educate the public about access problems are permitted.

"This agreement should put an end to the misleading marketing campaign that AOL waged to attract subscribers to its offer of unlimited service," said New York Attorney General Dennis Vacco.

Stone said he expects more states to sign on to the agreement soon. Although 36 states signed the agreement, consumers in any state can apply for the refund, Stone said.

America Online also outlined several steps intended to ease network congestion — from spending more money on modems to scaling back efforts to attract new members.

Since it began offering unlimited access, AOL members spent an average of 32 minutes per day online, company officials said. That is more than double the average time spent in September. Last month, AOL members logged a record 102 million hours online, up from 45 million in September.

By Kim Girard and Stewart Deck

SEVERAL STATES are proposing legislation that would slap fines on Internet service providers whose service levels plummet as a result of oversubscribing the network.

Although increasing government intervention in the Internet is looked upon warily by many, some analysts said it may actually be beneficial because it could make potential shoppers more comfortable.

"With Internet commerce, you're into a different bailiwick," said Portia Isaacson, an analyst at Dream IT, a consultancy in Boulder, Colo. "A lot of people would prefer to see the Internet stay generally unregulated, except when it comes to commercial transactions and banking."

## NO TRUST

Passing regulations in those areas will give people some assurance that the system is reliable, Isaacson said.

"People just don't trust the Internet for secure transactions

yet," said Melissa Bane, an analyst at The Yankee Group in Boston. Some government regulations regarding commerce — unlike other aspects of the Internet — will be welcomed by users and the industry because regulations will bolster "the perception that it's a safe market," Bane said.

The legislation that was proposed last week came in response to the outcry from dissatisfied America Online, Inc. customers who were shut out.

A bill now in Connecticut's legislature would require reasonable guidelines for service capacity, a method for calculating refunds for persistent lack of access and a schedule of fines for Internet providers that oversubscribe networks.

In North Dakota, one proposed bill would require Internet access providers to tell prospective customers their ratio of users to phone lines. Another proposal in North Dakota would require a provider to have the capacity to support 70% of its customers online at any given time.

## IRS CIO: Agency will consider outsourcing

By Sharon Machlis

IRS chief information officer Arthur Gross last week told a congressional hearing that the agency — after years of unrelenting criticism — is examining options for outsourcing tax return data processing. That move is likely to encounter even more criticism from privacy advocates worried about sending sensitive taxpayer information outside the government.

To date, the Internal Revenue Service has spent \$4 billion on modernizing the agency's beleaguered information technology

systems. Even so, "The Tax Systems Modernization program has been a complete disaster," said Rep. Rob Portman (R-Ohio), co-chairman of the National Commission on Restructuring the IRS. "Clearly, the IRS needs outside help to get the modernization job done."

Toward that end, IRS documents given to *Computerworld* indicated a two-tier proposal:

- Near-term replacement of the aging manual data entry system.
- Longer-term pursuit of outsourcing and the deployment of imaging and other advance technologies.

The proposal notes that "... the IRS must end its dependence on antiquated technology and an increasingly scarce seasonal workforce as well as expand its electronic commerce programs."

Also in the short term, a report issued last month by the General Accounting Office urged the IRS to examine alternate ways of processing tax forms such as the 941 before enlarging the use of the Service Center Recognition/Image Processing System (SCRIPS). IRS officials said they will complete a cost/benefit analysis by the end of the fiscal year.

IRS officials last week declined to comment on the GAO report and said officials were unavailable to comment on GAO's testimony.

But in the agency's formal response to the GAO report, officials agreed to conduct tests to ensure SCRIPS can meet peak production loads in the future. New scanners are planned to solve jamming problems.

In its report, the GAO said the 2-year-old SCRIPS computerized imaging system performed "significantly better"

last year than in 1995, but it still failed to deliver on many of its promised benefits.

Yet the cost for SCRIPS continues to climb, while labor savings remain less than expected.

Installed in late 1994, SCRIPS is still being modified. It scans tax forms and uses optical character recognition (OCR) to turn them into computer-readable data. It was supposed to boost productivity 20% over manual data entry and 10% vs. older OCR equipment. But in 1995, it actually processed one type of form, the 1040EZ, 7% slower than when done by hand.

## PROBLEMS FROM THE START

SCRIPS has been dogged by problems since its inception. Those included scanners that jammed when processing returns on thin paper and system software that wasn't fast enough to keep up with the hardware. Instead of the planned 25.6 staff years to process the bulk of the 1040EZ forms in 1995, 66.5 staff years were needed.

On the plus side, SCRIPS suffered substantially less downtime — 43 hours in last year's second quarter vs. 791 hours

in 1995 — while processing 1040EZ forms about 6% faster. But it handled only about half of those forms; it was supposed to process all of them. It also wasn't used for any 941 or 1040PC forms, although plans called for it to process 93% and 50% respectively by last year. GAO officials said a decision to move form processing from 10 centers to five essentially doubled the workload of each SCRIPS system without adequate redesign. Modifications were made last year but haven't been fully tested.

The GAO pegged the latest overall SCRIPS price tag at \$288 million; previous estimates ranged from \$133 million to \$209 million. Some of the increase was caused by at least \$20 million in unbudgeted maintenance costs, according to the GAO.

Many of the problems that plagued SCRIPS in 1995 could have been avoided if the IRS had conducted a better pilot test, including an examination of all software applications and the system's ability to handle peak tax-season processing loads, according to the GAO report.

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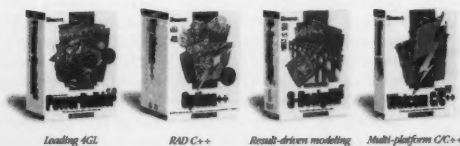


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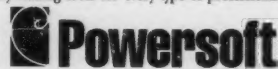


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# IS execs put trust in peers, not analysts

By Justin Hibbard

DESPITE ALL THE money spent on analysts, consultants and publications, IS executives still go to one another first when they need advice.

That was the conclusion of a survey of 280 information systems and business executives released last month by Cambridge Technology Partners, Inc. in Cambridge, Mass. Peers ranked as the No. 1 source of counsel for IS executives, followed by internal research and development, publications and analysts.

"Peers can provide objectivity," said Burke Autrey, director of IS at SuperComm, Inc. in Dallas.

Autrey said he seldom relies on analysts' reports because he finds it difficult to tell whether they are biased toward a research organization's agenda. Reports are also sometimes outdated by the time they are published, he said.

Autrey said he relies instead on industry publications for the most recent information.

"Some could accuse you of trying to manage by magazine," he said. "But currently, that's the most effective way I've found to do it."

## SHARING WITHIN REASON

Gordon Ebanks, director of global information technology at Tambrands, Inc. in White Plains, N.Y., said he often turns to his counterparts at other companies when weighing an important decision. But he said there is a limit to how much he will discuss with them.

"You're going to be less willing to disclose special projects that give you a competitive advantage," he said.

Ebanks said IS executives are more likely to ask peers about technologies that don't work than technologies that pay off. Downsizing has put more pressure on executives to produce results, he said.

"Peers can provide objectivity," more so than analysts' reports.

BURKE AUTREY,  
SUPERCOMM

Ebanks said he relies on many channels for staying in touch with peers, including telephone, conferences and electronic mail. Those channels concur with the results of Cambridge Technology Partners' poll, which found that telephone, conferences and chief information officer-only seminars were IS executives' most common means of communicating with one another.

Ninety-two percent of survey respondents said they use E-mail, and 90% said they use the World Wide Web.

But only 15.9% said they use threaded discussion groups to interact with peers. Many consultancies, including Cambridge Technology Partners, offer such online forums for a fee. They provide a password-protected Web site where IS executives can post messages.

# SyJet tries to do Jaz one better

► Portable drive boasts 50% more capacity

By Matt Hamblen

ATTENTION PC storage hogs: There is now a 1.5-G-byte removable cartridge hard drive to hold more Internet downloads, graphic and audio files and valuable data.

Analysts said the SyJet drive from SyQuest Technology, Inc. in Fremont, Calif., will provide head-on competition to the Jaz drive from Iomega Corp. in Roy, Utah. Jaz was released late in 1995.

The external, portable SyJet began selling last month for \$499 — the same price as Jaz. But SyJet has 50% more capacity per disk than the 1-G-byte disks used in Jaz.

"The big difference is 50% more capacity," said Crawford Del Prete, vice president of storage research at International Data Corp. in Framingham, Mass.

Users will be able to buy the popular Jaz or get more capacity with SyJet, Del Prete said.

## UPHILL BATTLE

Beta tester Michael Dorian said he has been using SyJet to edit and mix up to 16 tracks of music.

"The SyJet drive performed so well that I hardly noticed a difference between it and my fixed drives," said Dorian, owner of MD Productions in Sherman Oaks, Calif.

"The most important issue for me is portability," he said. "I can take it from one postproduction studio to another."

But SyJet will have an uphill battle against Jaz.

Iomega sold about 600,000 Jaz units last year on the back of a huge marketing campaign, Del Prete said.

Still, Del Prete predicted SyJet will be profitable and will help SyQuest recover from difficult times, including the battle it lost against Iomega's Zip drive.

Many Jaz and SyJet drives will be sold to small businesses, but an Iomega official said almost half of Jaz's customers are mid-size and large businesses that want to extend hard disks.

# Internet providers

CONTINUED FROM PAGE 1

president of CIMI Corp., a consultancy in Voorhees, N.J. "The [Internet service providers] need more people at the bottom to pay for the people who've been up online. It's clear that the unlimited access pricing model is doomed."

Users agree that the lack of a marketing model is largely the cause of today's Internet service provider problems.

"There are some small regional [providers] who don't oversell and are quite successful," said Bob Moskowitz, a technical support specialist at Chrysler Corp. in Highland Park, Mich. "But when [service providers] oversell, they blow their business model and customers leave."

## JOINING FORCES

To better protect their companies from the latter, Moskowitz and other members of the auto industry have joined forces to create criteria for certifying providers for use by manufacturers and their trading partners.

"Setting a business standard is going to be tough, and not

many [providers] are going to be able to meet it, but it absolutely has to be done," Moskowitz said. "The goal is to make sure [service providers] have highly reliable services for business and consumer use as well as experience handling problems."

The group, which also includes Ford Motor Co. and General Motors Corp., is still discussing which metrics to use

for certification.

The idea of certifying providers for business users could catch on in other industries, said Caroline Robertson, an analyst at International Data Corp. in Framingham, Mass. "You're going to see a Good Housekeeping Seal of Approval-like movement going on," she said. "Some of that will be through vertical market organizations working for their industries."

Several information systems managers said they are discovering reliability and service quality

problems with some Internet service providers and online service providers that offer flat-rate access plans. Often, those providers can't fund the infrastructure improvements needed to expand networks and provide reliable connectivity, they said.

## CHANGING PLANS

In the meantime, users and analysts agreed many providers are likely to change their pricing/usage plans soon.

"They just can't continue like this much longer," predicted Jim Fey, director of strategic projects at Private Mortgage Insurance Co. in San Francisco.

Some providers, such as Netcom On-Line Communication Services, Inc., have already started to phase out unlimited dial access. Others, such as General Electric Information Services, dropped the plan long ago.

Fey and many other users said providers should respond by decoupling current functions — such as electronic mail or newsgroups — and charging extra for many of them. Computerworld contacted several providers, including AT&T Corp. and Sprint Corp., about such plans last week, but their officials declined to discuss them.

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# IS staff hits recruiting circuit

► Corporate recruiters enlist high-tech help to find talent

By Julia King  
SAN FRANCISCO

THE BEST PERSON to spot a skilled software developer is another skilled software developer.

The same is true for knowledgeable network engineers or capable project managers, which is why more high-tech employees may soon be sent out on the recruiting circuit.

Corporate recruiters are finding that companies can save time and money by bringing along information systems staffers to help reel in talented personnel.

## HELP WANTED

### How to help bolster recruiting

- Distribute lists of IS job openings at association and user group meetings
- Include corporate staffing managers in IS strategic planning sessions
- Team up with corporate recruiters on campus visits and job fairs

"Software engineers can tell right away who will fit in to their group," which significantly cuts the time and dollars that go into that identification process, said Leonore Willoughby, senior manager of staffing and placement at McDonnell Douglas Aerospace Co. in Huntington Beach, Calif.

Ordinarily, nontechnical recruiters and advertising are used to round up qualified candidates, based on a list of IS requirements. Resumes are then sent back and forth between recruiters and IS managers, which can stretch hiring times, increase costs and delay IS projects.

## PART OF THE TEAM

McDonnell Douglas has completely overhauled its recruitment process to include engineers and IS managers at the front end of the hunt.

Now, for example, IS managers are part of the team that writes hiring criteria and travels to campuses to interview college seniors.

Similarly, AT&T Corp.'s Networking and Computing Services Division has a team of five IS managers who accompany recruiters to technical job fairs.

"As technology gets more complex, it makes it more difficult [for nontechnical recruiters] to interview technical people," said Charles Tapia, an AT&T human resources manager in Pleasanton, Calif.

"It's a big demand on IS managers' time, but they're the ones who have the knowledge. They speak the same language as the people we're trying to recruit," Tapia said.

Still, IS managers at most large companies remain uninvolved in recruiting.

Instead, their role is often limited to

writing brief job descriptions of staffers they need for immediate projects, according to several attendees at a recent high-tech recruitment conference here sponsored by the International Quality and

Productivity Center in Little Falls, N.J.

"What's needed is better communication between IS and human resources," said Nancy Hopkins, a senior IS employment specialist at Memorial Sloan-Kettering Cancer Center in New York.

For starters, Hopkins suggested that

human resources managers participate in IS strategic planning. That way, staffing managers will know more precisely what skills IS needs and when they will be needed.

"Traditionally, human resources has been in reactive mode with IS hiring. But there's a lot of savings that could be had by involving IS and HR working more closely in the recruitment process," Hopkins said.

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# Remote workers stretch help desks

By Mindy Blodgett  
and Patrick Dryden

HELP DESKS are used to a daily stream of crises. But the latest crisis — coping with the high-cost, high-intensity support needs of corporate telecommuters and road warriors — has no end in sight.

So help desks are scrambling to invent ways to service the swelling ranks of remote users. The strategies include special training on mobile issues, assigning a dedicated help desk staffer and even outsourcing.

"Mobile workers have really changed the nature of the help desk. But I don't think we have even seen the full impact as yet — and we're still figuring out how to deal with it," said Bruce

**Aegon Insurance Group in Clearwater, Fla., designed this mock home office to train telecommuters on remote-access issues and simulate the home office experience.**

Benham, vice president of information systems at RE/Max International, Inc., a real estate company in Englewood, Colo.

## HIGH SUPPORT

The problem is expensive, and it won't ease up soon. International Data Corp. in Framingham, Mass., estimates that one support technician is needed for every 20 to 30 remote users. That ratio is about 50% higher than the ratio for desktop PC users.

And Gartner Group, Inc.

in Stamford, Conn., has found that the five-year cost of ownership — including acquisition, administration and technical support for desktops — is \$13,000 higher for laptops.

Support for remote users is especially important because they see the help desk as their technical lifeline.



## The vital lifeline

The average office worker typically turns to a cubicle mate first for help with hardware and software glitches or just shifts to a nearby network station when a job must be finished without delay.

But home-alone telecommuters and solo travelers lack the informal support network that office workers take for granted. For them, the central help desk is their lifeline. Now many organizations report they are taking special precautions to keep their remote users afloat.

"For our telecommuters, if a computer or printer goes down, they don't work," said Ron Bakshi, assistant vice president of applied networking at Nortel, Inc. in Richardson, Texas.

"The frustration level for a remote user is much higher," Bakshi said. "They feel uncomfortable rapidly because they don't have somebody next door to share the situation."

At Nortel, about 1,500 telecommuters work four days per week outside the office to save money, and about 10% of the 65,000 employees require remote access to electronic mail daily. To improve responsiveness and sensitivity to those remote users, Nortel has tried educating the help desk and providing flowcharts tailored to their support needs.

"We're trying to make the help desk smarter because we don't want to establish a separate SWAT team for telecommuters that would require a huge, costly infrastructure for around-the-clock support," Bakshi said.

— Patrick Dryden

# Videoconference via your browser

## ► First Virtual launches intranet video software

By Matt Hamblen

FIRST VIRTUAL CORP. in Santa Clara, Calif., last week announced software video applications to be launched on intranets with a Navigator or Internet Explorer browser.

Users will be able to integrate First Virtual Corp.'s (FVC) Media Operating Software 4.0 with browser software from Netscape Communications Corp. or Microsoft Corp., company officials said.

The desktop user can access the browser and then click on an icon for a videoconference, stored video clip or live video broadcast.

A pilot project that uses the software is under way at the University of California Lawrence Livermore National Laboratory in Livermore, Calif.

"Managers and group leaders are using it right now. In the near future, we'll have actual applications running for human relations, alcohol and substance abuse programs," said Thomas

Morado, a senior technologist at the lab. "There's been a very positive ... reaction to it. A lot of groups are waiting to get on to the network."

Being able to use a web browser to launch video is more

good move."

And FVC's attempt to provide high-quality video through Asynchronous Transfer Mode (ATM) networks will be valuable to most enterprises. "Most organizations want quality video as you see on TV," Earon said.

FVC can provide videoconferences at the desktop at about 15 frame/sec. quality, or about half the television quality of conference-room systems, an FVC official said. Morado said users are satisfied with the desktop rate, which is markedly better than videoconferences that were conducted over the laboratory's Ethernet network.

A prototype that uses FVC and PictureTel Corp. videoconferencing products is also being studied at the Bureau of Labor Statistics in Washington, linking it to the U.S. Department of Labor headquarters, according to Phil Rene, a computer specialist. Rene said the Labor Department will spend \$2.6 million in the next 12 months to expand the ATM video network.



**New software lets users videoconference and watch live video through an intranet**

convenient for users, said Jeanine Linehan, a project manager at Sage Research, Inc. in Natick, Mass. "You don't have to click in and out of Windows, and the Web browser is a familiar vehicle."

S. Ann Earon, president of Telemanagement Resources International in Skillman, N.J., said using the browser for easy video access is "definitely a

Users said one solution is to train help desk personnel in the special problems of mobile workers, such as communications difficulties and insufficient battery life.

Benham said one RE/Max help desk staffer is devoted solely to mobile workers. The company also has standardized its hardware and software configurations and has spent a lot of time training users to do their own troubleshooting.

Some corporations design their help desk with the goal of supporting legions of remote users.

As many as 35,000 users at Xerox Corp. may primarily work at home, in hotel rooms and on customer sites, so Xerox and outsourcer Electronic Data Systems Corp. "built a service posture with remote users in mind," said Joe Grant. Grant is vice president of global technology, strategy and infrastructure at Xerox in Stamford, Conn.

For example, Xerox service technicians in the field have a special hot line for support. It was designed to keep the technicians up and running because they depend heavily on their laptops to connect with central dispatch, diagnostic and documentation applications, Grant said.

"The rest of us professionals can wing it with telephone, pen and paper, waiting longer for help when our laptop has a problem," he said.

## OUTSOURCING OPTION

Outsourcing support for remote and mobile workers is another growing trend. Kim McGonegle, telecommuting coordinator at Aegon Insurance Group in Clearwater, Fla., plans to study

the costs of outsourcing vs. internal support for telecommuters this year.

"One of the advantages of telecommuters is the flexibility — that they can work any time of day," McGonegle said. "[But] if your help desk is only open 7 a.m. to 7 p.m., where does that put the early bird or the night owl?"

McGonegle said her company will be comparing the per-seat charge for internal help desk support with the hourly charges of an outsourced help desk.

"This could mean a backlash," McGonegle said. "Because the internal staff may be priced out of the market."



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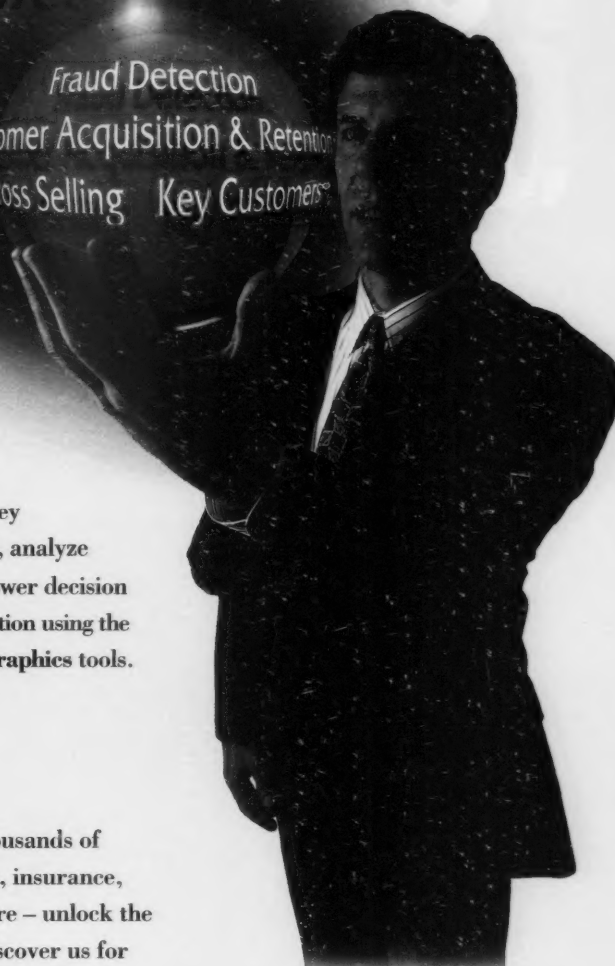
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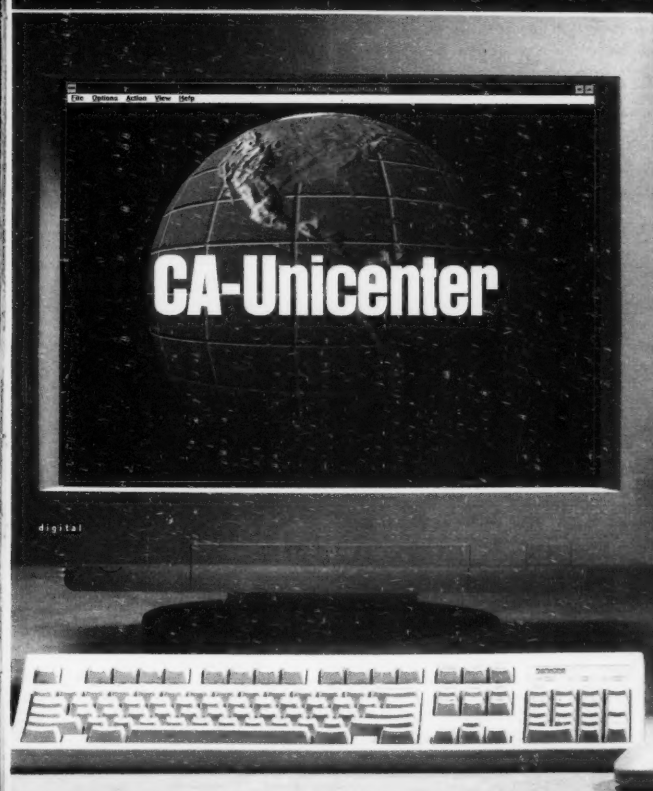
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# StreetTalk hits the desktop

► *Banyan looks to fire up sales by unbundling directory services engine from Vines operating system*

By Laura DiDio

BANYAN SYSTEMS, INC. this week will announce an unbundled version of its StreetTalk directory services that runs on desktop computers. The add-on software package, StreetTalk Desktop, is available now.

It will provide end users with access to the advanced capabilities of the StreetTalk directory services, single user log-in and access to all en-

terprise resources, according to sources close to Banyan. Until now, StreetTalk has been strictly server-based, and control has rested with network administrators.

StreetTalk Desktop is part of the Westboro, Mass., company's ongoing strategy to uncouple its highly touted directory services engine from the core Vines operating system in order to jump-start sales, said Bob Sakakeeny, an analyst

at Aberdeen Group, Inc. in Boston.

StreetTalk Desktop will run on any Windows 95 or NT Workstation PC, sources said.

"It's definitely something we'd use, and I'm looking forward to it," said Bill Sheehan, senior technical support specialist at Stone and Webster Engineering Corp. in Boston.

Sheehan said one department of 65 engineers in his firm tossed out Vines but sorely needs an advanced directory

services set.

"Right now, they're using Pegasus Mail, but it doesn't automatically provide them with a list of the 3,500 people in Stone and Webster. So StreetTalk Desktop would be perfect for them. And it might be a way to forestall further defections because there are no other products like this shipping yet," Sheehan said.

Rod Cleaves, manager of information technology at MDI Creative Co. in Lincoln, Mass.,

agreed that StreetTalk Desktop "sounds interesting."

"We may opt to go all-Windows NT Server, in which case, we wouldn't need StreetTalk Desktop," he said. "But we'll definitely give it a look."

## TO PUT IT BLUNTLY...

Not everyone agreed. One information systems manager at a Vines shop in the Midwest called StreetTalk Desktop a "painfully stupid idea." He added, "It's like installing your own private railroad track to take you from your home to your office. It won't matter anyway, since we're migrating to Windows NT Server."

Pricing for StreetTalk Desktop ranges from \$390 to \$1,450.

## FBI targets BBS operators, seizes hardware in software piracy sting

By Wylie Wong

THE FEDERAL BUREAU OF Investigation last week raided the homes and offices of about a dozen bulletin board system (BBS) operators suspected of pirating software in eight cities.

FBI officials seized computer hardware and documents as part of an eight-month investigation, code-named "Cyber Strike," in which authorities looked at software piracy over bulletin boards and through the use of Internet Relay Chat channels and file transfer protocol over the Internet.

The FBI hasn't determined the value of the computers seized. No arrests have been made, but the agency believes the dozen BBS operators are connected, FBI spokesman George Grotz said.

Steve Shefler, first assistant U.S. attorney in San Francisco, said that after the FBI analyzes data from the seized computers, the U.S. Attorney's office will decide whether to press charges.

Searches were conducted in Atlanta; Des Moines, Iowa; Miami; Oklahoma City; Pittsburgh; Columbus, Ohio; and San Leandro and Cedar Ridge, Calif.

The effort, launched eight months ago by the FBI's San Francisco-based International Computer Crime Squad, target-

ed online services that officials say most flagrantly violated copyright laws. Last week's raids were the first searches resulting from the investigation; more are expected.

According to the FBI, the investigation revealed that "pirated software often has appeared on pirate boards within a day of its public release and in many cases before its official release by the software manufacturer."

Many pirate BBSs stock nearly every release by major software publishers, and some focus on specialized software such as games, the FBI said. Some BBSs compete

for prestige and membership by trying to maintain the largest selection and latest editions of software.

Some operators make money by charging users a fee to join, and others offer the software in exchange for uploads of other applications, said David Phelps, spokesman for the Software Publishers Association (SPA).

## VENDORS PLEASED

Software companies praised the FBI's undercover investigation.

Developers have always dealt with the type of software piracy in which a business customer buys one piece of software and installs it on 10 computers, said Kathy Tom, spokeswoman for Autodesk, Inc., a designer of

PC software and multimedia tools in San Rafael, Calif. But companies fear the Internet's limitless potential for people downloading products for free, she said.

"We're tremendously impacted by software piracy. For every one copy of AutoCAD that is sold, seven or eight are stolen," Tom said. Autodesk has 1.5 million registered users of AutoCAD, a computer-aided de-

sign tool used by engineers and architects.

Software allegedly being illegally copied and distributed to BBS users included utilities, graphics, operating systems and games from Sony Computer Entertainment, Microsoft Corp., Adobe Systems, Inc., Intuit Corp., Symantec Corp., Novell, Inc. and Nintendo of America, Inc.

Dan Stevens, a spokesman for Sega of America, Inc., declined to release the financial impact pirating has on his company. But Stevens said he hopes the FBI's investigation will deter people from stealing software in the future.

"The problem we've seen has

been taking our characters and properties on bulletin boards and downloading them for free. It's always flawed in some way and certainly not the way we want to portray our characters," he said. "It can be damaging."

In 1995, software piracy resulted in worldwide revenue losses of more than \$13 billion and revenue losses of \$2.9 billion in the U.S. alone, according to the SPA in Washington. The association will share its database of more than 1,600 alleged pirate BBSs with the FBI to aid the investigation, SPA executives said.

"It's a start," Phelps said of last week's raids. "But there's a lot more that needs to be done."

• A new way to navigate legacy applications

## Suite boasts easy access to mainframe data

By Justin Hibbard

ENTERPRISELINK Technology Corp. recently introduced a software suite that attempts to go beyond screen scrapers and terminal emulators to bring mainframe data to intranets and the World Wide Web.

Unlike products that redisplay mainframe screens in a browser, EnterpriseLink's SmartTran suite lets users access data from many screens simultaneously using the Web's graphical, point-and-click interface.

Using the suite, developers can create original Hypertext Markup Language (HTML) pages that contain objects such as check boxes or radio buttons linked to individual data fields in multiple mainframe screens.

Cindy Borovick, an analyst at International Data Corp. in Framingham, Mass., said Smart-

Tran is the first product she has seen that lets developers combine multiple mainframe data objects on an HTML page.

Developers can drag and drop the objects to assemble a page that displays specific mainframe data or add other data sources, such as Java applets, ActiveX controls and links to relational databases or client/server applications. The entire operation requires no changes to legacy mainframe code, according to EnterpriseLink.

The vendor's goal is to let developers redesign the way users navigate through a legacy application. Rather than flipping through mainframe screens, users can get the data they need in easily navigable Web pages.

That easy access will translate into savings, according to Hirofumi Minamiura, an engineer at The JRI Systems Solution Ltd., a SmartTran beta-test site in

Osaka, Japan.

"SmartTran will bring us a reduction of manpower costs and equipment costs through a direct inquiry service for customers via the Internet," Minamiura said.

**Rather than flipping through mainframe screens, users can get data they need in easily navigable Web pages.**

The company plans to let customers request data from its mainframe through the Web. The information systems staff also expects to cut the cost of training internal users by migrating mainframe applications to an easy-to-use, graphical intranet, Minamiura said.

"For every one copy of AutoCAD that is sold, seven or eight are stolen."  
— Kathy Tom, Autodesk

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Sun Ultra Enterprise 3000	DB2/Solaris V2.1.2	6662/\$152
HP 9000 D370	Sybase/HP UX 10.20	5822/\$148
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Of course, the TPC benchmarks are only part of the reason why the ProLiant 5000 can deliver industry-standard solutions for your enterprise.

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# Computer Industry

## CONSOLIDATIONS

### Mobile merger mania

By Mindy Blodgett

THE ACER GROUP'S recent purchase of Texas Instruments, Inc.'s laptop business heralds a year of consolidation in the cut-throat mobile computing business, industry analysts said.

"The top-tier vendors should survive in the current market, but there are many vendors on the edge," said Andrew Seybold, editor of "Outlook on Communication and Computing" in Boulder Creek, Calif.

The consolidation trend continued last week when Samsung Electronics Co. announced it was seeking to acquire all the outstanding shares of AST Research, Inc. Samsung currently has an equity stake in AST of about 49%. AST's laptop business, which had been ranked 10th in the U.S. in the fourth quarter of 1995, dropped out of the Top 10 by the third quarter last year, according to International Data Corp. (IDC) in Framingham, Mass.

Unfortunately, further consolidation, if it does occur, won't help users waiting for laptops, said Randal Giusto, an analyst at

IDC. Giusto predicted supply shortages won't ease any time soon.

But continued price cuts will squeeze profit margins and likely lead more vendors to drop out of the market or look for partners, Giusto said.

TI was ranked fourth among laptop vendors in the U.S. by IDC for the third quarter last year. Acer is the world's seventh-largest PC maker.

Steve Lair, who is moving from TI to Acer as senior vice president of sales and marketing for commercial systems, said the Acer/TI agreement "is not two losers coming together. But in some cases in the coming year, you may see two losers coming together."

**Users waiting for laptops won't be helped by consolidation.**

— Randal Giusto, IDC

... It's a very tight market." Industry observers said the laptop divisions of Apple Computer, Inc. and Digital Computer Corp. may be vulnerable.

Apple's laptop market share went from fourth in the U.S. in the fourth quarter of 1995 to sixth in the third quarter last year. And Digital hasn't cracked the Top 10.

Rumors have abounded in recent weeks that Compaq Computer Corp., the No. 3 laptop vendor as ranked by IDC, is in an acquiring mode this year.

In the case of TI, industry observers said, the company spent heavily to gain market share. Profitability, however, was elusive. The company also decided in the past year that the laptop industry was too volatile, observers said.

## DG turnaround turns heads

► Analysts pleased with results, upgrade forecast

By Jaikumar Vijayan

DATA GENERAL CORP.'s quiet turnaround is six quarters old and gathering momentum.

After trundling along on the brink of oblivion for most of the '90s, the Westboro, Mass.-based company is showing signs of a revival that is raising user and Wall Street interest in DG once again.

"There was a time about two years ago when we had pretty much written off DG," said Mark Brandes, MIS manager at Central Grocers Cooperative, Inc. in Franklin Park, Ill.

"Then they came back and convinced us about their products and the possibility of their turning things around. Now we are glad we stayed," he said.

### RIISING PROFITS

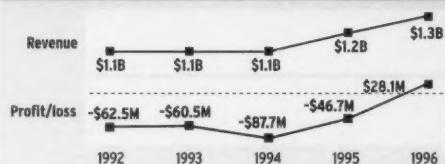
DG recently announced that its profits more than doubled to \$10.4 million on revenue of \$348.5 million for the quarter ended Dec. 26.

The news capped a year in which overall profits grew to \$28.1 million on total revenue of \$1.3 billion. Product revenue rose by 22% to \$924 million — the highest in DG's 28-year history. And expenses were down \$25 million, mainly as a result of cost savings from a

round of layoffs in 1995.

Wall Street reacted by upgrading its forecasts for the company. DG stock is now at about \$18, compared with a low of \$9.25 in mid-July last year. That is quite a turnaround for a company that has seen red ink flow in nine of the past 11 years.

### DATA GENERAL'S REVIVAL



"They are very paranoid about getting back into a losing situation and have imposed strict control over expenses and growth," said Jerry Sheridan, an analyst at Dataquest in San Jose, Calif.

For instance, DG's entire comeback so far has almost totally depended on just two product streams: its Avion line of multiprocessing servers and its Clarion range of enterprise storage products.

Since shifting from Motorola, Inc. chip technology to Intel Corp. processors in 1995, the company has focused on layer-

ing high-margin value-adds such as clustering and fail-over technology on top of standard Intel boxes. And rather than attempt to sell Clarion storage products on its own, it decided to sell the product through other hardware vendors.

### HIGH PAYOFF

Both strategies are paying off handsomely. In the latest quarter alone, sales of Avion systems grew 15% while Clarion products grossed more than \$100 million. Together, the two businesses account for about 90% of DG's current product revenue, according to the company.

"When you look at their two growing revenue streams and the strict cost controls they have in place, it is easy to see why they are reporting such solid profits," said Peter Labe, an analyst at Wall Street firm Buckingham Research Group in New York.

DG plans to expand its product focus later this year by launching a separate OEM unit to sell its high-end Numaline family of servers based on its nonuniform memory architecture. DG will also set up another business unit to sell new ThinLine Internet servers.

## Netscape's growth flattens out

► Microsoft eats into Navigator revenue

By Justin Hibbard

ANALYSTS ARE asking Netscape Communications Corp., "How high is up?"

Netscape last week released revenue figures that suggest that the rapid growth it has enjoyed since it was founded more than two years ago may be leveling off. Revenue for the Mountain View, Calif., company's fourth quarter was \$115 million, a 15% increase from its third

quarter. But that is less than half the growth Netscape reported in the first three quarters last year.

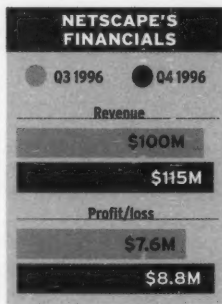
"The drop [in the growth rate] was rather dramatic," said Emeric McDonald, an analyst at Robertson, Stevens & Co. LLC in San Francisco.

McDonald pointed out that sales of Netscape's Navigator browser fell 13% from the prior quarter. Navigator accounted for 51% of the company's total revenue last quarter, down from

59% in the previous quarter.

The percentage of Netscape's revenue from servers, meanwhile, rose from 25% in the third quarter to 33% in the fourth quarter.

Microsoft Corp. has emerged as Netscape's major threat. The number of businesses that use Microsoft's Internet Explorer as their primary browser rose from 8% to 28% during the past three months, according to a survey released last week by Zona Research, Inc. in Redwood City, Calif. The survey found that



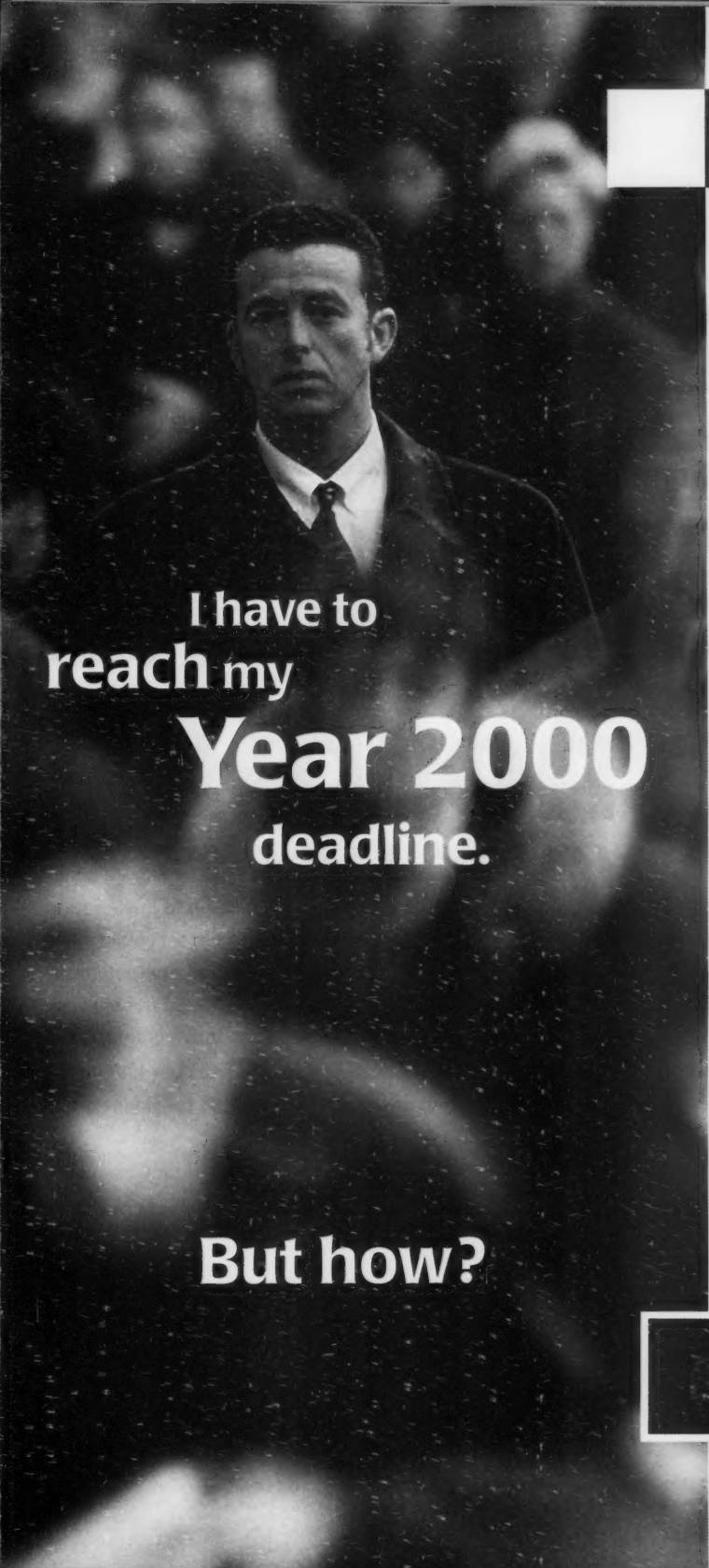
comparable numbers for Navigator fell from 83% to 70% during the same period.

Netscape officials downplayed

the browser wars and said the company is focused on gaining share for Communicator and SuiteSpot 3.0, which together form a groupware package.

McDonald said the package will likely sell in volume beginning in the second quarter.

Whether groupware sales will make Netscape's revenue grow as quickly as it has in the past remains to be seen. Sales cycles for groupware last much longer than for browsers and World Wide Web servers, said David Smith, an analyst at Gartner Group, Inc. in Stamford, Conn. Still, Gartner expects Netscape to displace Novell, Inc. as the No. 3 groupware vendor by 1999.



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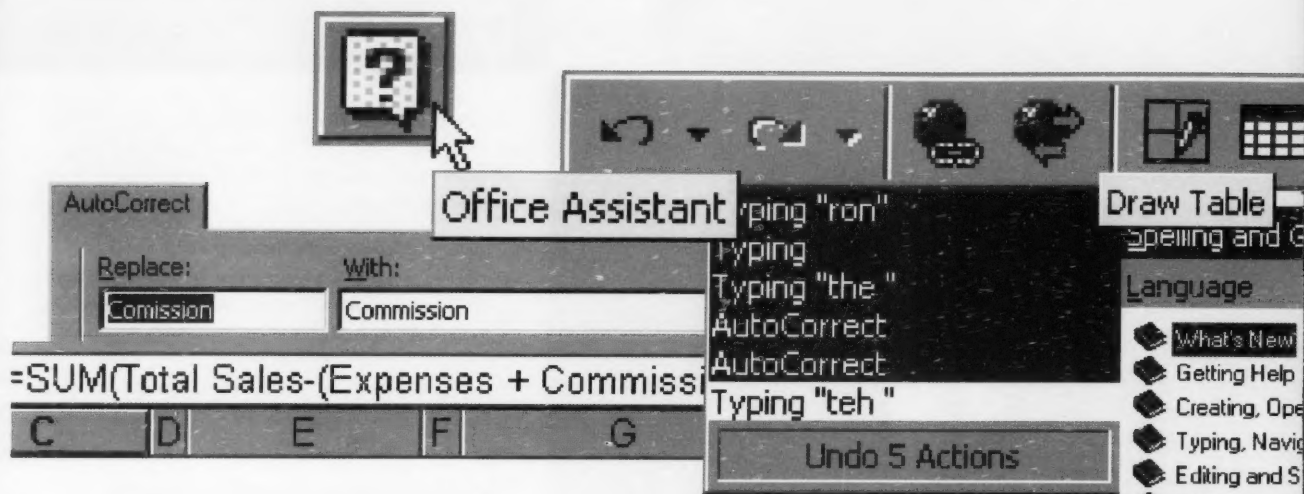
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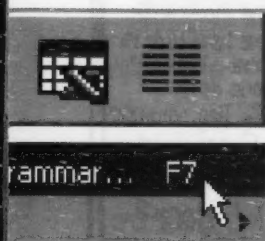
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## Flat fee backlash So you signed up with America Online for a flat,

monthly fee of \$19.95 and expected unlimited access to AOL and the Internet? What did you get instead? Blank screens, lost E-mail and knots in your stomach.

AOL's grab for market share backfired because the company failed to sufficiently upgrade network capacity to accommodate traffic during peak usage periods. Even if AOL makes good on promises to accelerate its network investment and provide customers with rebates, the company gave itself an indelible black eye.

Still, others may learn from this debacle. Industry experts say many Internet service providers that offer unlimited dial-up access to the 'net will have to significantly upgrade their networks

to avoid the AOL-unplugged syndrome (see story, page 1).

Flat fees, although great for customers, are inherently inefficient. They reward users for staying logged on, even if they aren't doing anything constructive.



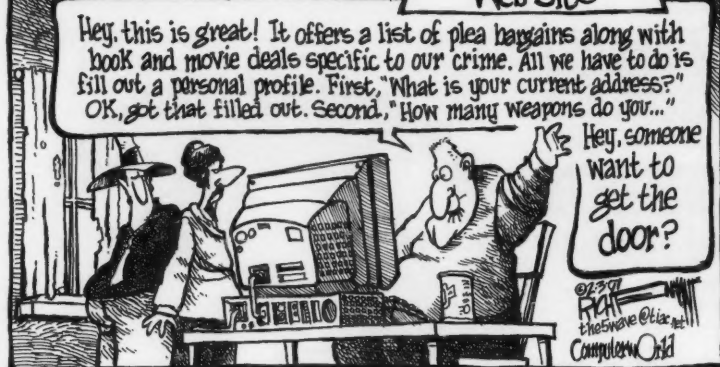
A recent University of Texas report found that ending flat-rate pricing would reduce user frustration and do more to control Internet traffic than investing millions of dollars in Internet infrastructure improvements would. At least one Internet provider seems to agree. Netcom On-Line Communications recently backed away from a \$19.95 flat fee rate, arguing that it couldn't sustain the company's network. And at \$19.95, there isn't much cash left for good old-fashioned customer service—a key differentiator for providers that service the needs of corporations bold enough to engage in electronic commerce.

If providers must wed themselves to flat fees, why not also charge users per E-mail, fax or other business transaction? Why not pin the online hogs with excise taxes for staying logged on over some generally agreed-upon time—say, an hour? That would force those users to pay for the luxury of resource consumption. It also might give Internet providers more incentive to invest in bandwidth improvements.

*Alan Alper*

Alan Alper, Editor, Computerworld Magazines Group  
Internet: alan\_alper@cw.com

## CUSTOMIZED WEB SITES WE'D LIKE TO SEE: The FBI Fugitive Web Site



## LETTERS

### Slow networks to trip up NCs

**T**HE BASIC ISSUE with network computers is: Will the network ever be fast enough to download applications? Some PC users (power users) can be responsible for their data, upgrades, installs, etc. Getting them a network computer is a waste. Others aren't responsible for backing up data, doing upgrades, installs, etc. In concept, the network computer is perfect for them.

The network computer model is a wonderful idea from a cost standpoint, but I have extreme doubts about its usability. I simply don't believe networks are fast enough to get the information there. Of course, if everyone had fiber-optic lines to their desk... but that would destroy the cost savings.

Arn Kratzer  
Santa Clara, Calif.

### Microsoft isn't after Sybase

**I**STRONGLY DISAGREE with Computerworld columnist Michael Schrage's prediction that Sybase may be acquired by Microsoft ["Attack of the RealAudio viruses," CW, Dec. 23/Jan. 2].

Microsoft SQL Server already has Sybase's database technology implemented. There is practically nothing to gain. Also, there is no way Microsoft will embrace Unix. The majority of Sybase/Unix users would rather migrate to Oracle or Informix than switch their hardware to Intel and their operating system to Windows NT for the sake of converting databases to Microsoft SQL Server.

Antitrust laws wouldn't allow Microsoft to own PowerBuilder and Visual Basic at the same time, so PowerBuilder would have to be

sold to another company for peanuts. Sybase's services divisions would conflict with Microsoft's strategy of having little or no involvement in custom applications development. Will Microsoft waste \$2 billion to \$4 billion to gain little technology, few customers, make Oracle stronger and help someone to undersell Visual Basic? I don't think so.

Andrew Zanevsky  
Great Lakes SQL Server User Group  
Chicago  
zanevsky@compuserve.com

### A voice from 'directory hell'

**I** READ WITH INTEREST the recent article "Vendors set to give LDAP directories a boost" [CW, Jan. 6] because my site is involved in full-scale Lightweight Directory Access Protocol (LDAP) implementation as part of its future messaging plans.

The tone of the article and the proposed Lightweight Internet Person Schema (LIPS) suggests that LDAP attribute definitions currently aren't standardized across implementations of LDAP. This simply isn't the case. LDAP is a lightweight implementation of X.500, but the attribute values for the directory are the same as they are for X.500. So what is LIPS to be used for, anyway?

The article may have actually been useful if the author had spent more time learning about the subject and determining if LIPS is really something useful or just more vendor acronymizing.

While it is quite true nearly all of us involved with large-scale disparate enterprise messaging are living in "directory hell," it isn't the

fault of the current implementations of LDAP. It's unfortunate this article leads one to believe LDAP is somehow incomplete.

Kay Schenk  
California State University  
Chico, Calif.  
kschenk@nova.csuchico.edu

### Manage people, not projects

**T**EAMS ARE NOT a new concept to data processing ["Pay inequities sap team spirit," CW, Nov. 4]. They go back to the dawn of the technology.

The inability to properly evaluate and compensate team members has nothing to do with teams and everything to do with a lack of priority in managing people.

What happened to job descriptions, job responsibilities, mutually agreed upon annual goals and, most important, the regular review with each person of their goal achievements and their business, social and technical skills?

The problem is too many managers are too busy managing projects instead of managing people.

Larry Swanson  
Bellevue, Wash.

Whatever happened to mutual goals?

Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.



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  70. Mining/Construction/Petroleum/Refining/Agriculture
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  85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
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  95. Other \_\_\_\_\_ (Please Specify)
3. Do you use, evaluate, specify, recommend, purchase? (Circle all that apply.)
  - Operating Systems
    - (a) Solaris (e) Mac OS
    - (b) Netware (f) Windows NT
    - (c) OS/2 (g) Windows
    - (d) Unix (h) NextStep
  - App. Development Products ☐ Yes ☐ No
  - Networking Products ☐ Yes ☐ No
  - Internet Products ☐ Yes ☐ No
4. Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)
  - (a) Internet software
  - (b) Internet browsers
  - (c) Web authoring/development tools
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  50. Business Service (except DP)
  60. Government - State/Federal/Local
  65. Communications Systems/Public Utilities/Transportation
  70. Mining/Construction/Petroleum/Refining/Agriculture
  80. Manufacturer of Computers, Computer-Related Systems or Peripherals
  85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
2. **TITLE/FUNCTION** (Circle one)
  90. Computer/Peripheral Dealer/Dist./Retailer
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3. Do you use, evaluate, specify, recommend, purchase? (Circle all that apply.)
  - Operating Systems
    - (a) Solaris (e) Mac OS
    - (b) Netware (f) Windows NT
    - (c) OS/2 (g) Windows
    - (d) Unix (h) NextStep
  - App. Development Products ☐ Yes ☐ No
  - Networking Products ☐ Yes ☐ No
  - Internet Products ☐ Yes ☐ No
4. Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)
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  - (b) Internet browsers
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5. Do you use the Internet? ☐ Yes ☐ No

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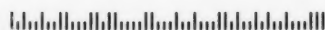
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# Developments we really don't need

Michael Cohn

**T**he hours are getting longer. The talent is getting more scarce. IS is no picnic these days. But there is good news: New trends and technologies are expected to make our jobs easier. The bad news: The items below aren't among them.

Someone, somewhere, has come up with a whole bunch of new stuff that will make us really miss the old stuff. What follows are the real stinker trends of this year. Avoid them at all costs.

If I were you, I'd just read this whole list, call in sick and go back to bed.

## TRENDS TO AVOID

1. **The personal-area network (PAN)** developed at IBM. This has to be a joke.

Devices the size of a credit card that exchange little electronic resumes when two people shake hands? What is this, the "joybuzzer" of the '90s? I'm not that crazy about touching people anyway.



## IS could do without chief millennium officers, anorexic clients and out-the-door-sourcing

What if everyone had a PAN? On a crowded subway, I'd probably blow a fuse. Besides, people know too much about me already. I'm working like crazy to make my boss forget half of it.

2. **The chief millennium officer (CMO).** Everywhere you turn, all you hear about is the year 2000 crisis. But if we have to

address it, please don't make us do it with a CMO. We've got too many chiefs already. The last thing we need is some six-figure hotshot blabbering that we face night after night of tedious work to get rid of thousands of bugs that threaten our business. We already have that — it's called month-end close.

3. **Outsourcing.** Outsourcing is out! This year's hot buzzwords are cosourcing, downsourcing and offshore-sourcing. But I can't take any more-sourcing. It just means folks in power ties show up and start making lots of money, while we 20-year veterans get shown the exit — better known as out-the-door-sourcing.

4. **WebTV.** No matter what you call it, it's doomed. People want PCs. They want TVs. But put the two together, and you've got nothing but trouble. If you want a TV to seem like a computer, it has to act like a computer — and make you wait. No more instant response! You need to hit Channel Change ... then wait. Hit Volume ... then wait. Maybe you'll miss a grope on *Melrose Place* or a diving catch by Len Dykstra. But slow response time is the unwritten

law of high tech, so don't fight it.

5. **Handheld PCs.** Actually, a small version of a laptop would come in handy when you're in seat 24C and the not-so-small guy in 23C suddenly leans back, inserting your traytop Toshiba several inches up your small intestine. But that wouldn't happen with a 7-in. handheld device — because by then some flight attendant has probably whisked it away under a platter of Salisbury steak.

6. **Very thin clients (VTC).** I never thought I'd say this, but I miss PCs already. I'm getting used to thin clients, but now VTC? These are devices so thin, all the intelligence is back at the server. They're so thin they don't even have backs. Their new name will be anorexic clients.

But maybe it's a step in the right direction.

We're all familiar with the architecture where all power and control is somewhere else, and you just passively receive instructions for instant action.

It's called being married.

Cohn has already applied for a CMO job. They said they'd get back to him in 36 months.

# E-commerce puts IS in the fast lane

John Gantz

**I**'ve got news for you. There's already more commerce taking place over the Internet than you realize. We've found that even in places such as Japan and Singapore, 15% to 20% of Internet users buy goods and services via the Web. In the U.S. and Europe, that percentage is more than 25% for home Internet users and almost 20% for business users. In more than half the transactions, actual payment is made via the Web. Three-quarters of transactions are business-to-business.

This means the Internet soon will support billions of dollars of transactions between buyers and sellers. Compared with the revenue of today's Internet shopping sites, a forecast of \$100 billion by 2000 sounds like a lot.

But compared with the value of all the orders taken in a day by all businesses worldwide, \$100 billion is just a blip.

Trust me, commerce on the 'net is already real and about to explode.

In the face of this growth, IS professionals may be tempted to concentrate on the technical challenges of making it happen. This means building secure net-

works, implementing the right application programming interfaces and reinforcing firewalls and commerce servers with the electronic equivalent of door locks and motion detectors.

But the growth signals an even more fundamental change for the IS community. Our whole approach to applications and network design will change — and change fast — in the next five years. This will affect careers.

Since the first digital computer was used commercially 40 years ago (a General Electric main-

frame), we've designed applications and processing networks pretty much with our own employees and business processes in mind.

But soon, the design of our most important applications and networks will center on customers and suppliers — a new constituency even more fickle and demanding than our end users.

It's going to be a crazy transition, and a lot of IS professionals may have trouble making the shift.

But those who do will find themselves at the center of revenue-producing activity in a way they've never been before. At last, IS professionals will gain corporate respect. They will be included in major operating decisions before they've been de-

cided, and they will work directly with key customers. IS will be the business, not just a support function.

If you want to get a feeling for life in the fast lane, consider the fishbowl America Online has lived in since its change to flat-rate pricing drove demand way past the ability of its networks and servers to handle it. Yowsah! What will happen when you run your version of AOL for your customers?

## MOVING UP

The impact of your decisions and the skill with which you exercise your craft will be immediately visible. This can be scary, but it also can be invigorating.

Salaries will rise, and more IS professionals will be wandering around executive suites.

It won't be limousines and corporate jets right away, but the idea isn't far-fetched.

The more electronic commerce, the more power that will accrue in the IS community. Start thinking now about how to take advantage of this once-in-a-lifetime career opportunity.




**IS will live in a fishbowl but will get the respect a revenue-producer deserves**

Gantz is a senior vice president at International Data Corp., a consultancy in Framingham, Mass. His Internet address is jgantz@idcsearch.com.





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## COMMENTARY

## Telecom's starring role

DAVID MOSCHELLA

**I**F, AS IS SO often said, the network is the system, then who is your system vendor? Today's corporate customer

faces a bewildering array of companies that promote themselves as strategic network partners. Those companies include

long-distance and regional telephone carriers, Internet access specialists, online service firms, value-added network providers, computer and data communications equipment manufacturers, systems integrators and outsourcers. Which is right for you?

Measuring vendor performance was



one of the main goals of *Computerworld's* recently completed enterprise network customer satisfaction survey (see Buyer's Guide, page 73). In reviewing the results of more than 1,600 interviews with IS executives, several important network service patterns emerged.

work service patterns emerged.

1. In terms of customers' overall satisfaction with wide-area data transmission services, the long-distance carriers — AT&T, MCI and Sprint — scored significantly better than the regional Bell operating companies (RBOC). And AT&T was the clear individual winner, a notable achievement because the market-share leader usually isn't No. 1 in customer satisfaction. AT&T did especially well in network performance and reliability, staff quality and expertise, responsiveness and, not surprisingly, reputation and credibility.

2. The Internet access category results were considerably more mixed. Major long-distance carriers and specialized access providers such as UUnet, BBN and Netcom posted comparable scores. The two most notable patterns were the poor performance of CompuServe and America Online and the solid performance of the huge "other" category, which comprised some 52% of the responses.

3. Satisfaction criteria varied sharply between the wide-area network and Internet access categories, reflecting different stages of maturity. Although customers in both markets agreed that "value for price" was the most important factor, they differed on almost everything else. WAN customer satisfaction was most highly correlated with service attributes such as responsiveness, flexibility and problem-solving.

In contrast, Internet users put more emphasis on reliability, performance and technical direction. As Internet and WAN usage merge, the WAN customer priorities will likely prevail.

The success of the long-distance carriers and the national Internet providers isn't surprising. Over time, the regional/long-distance supplier structure will likely fade away and be replaced by competing national and even global entities. After all, the current RBOC structure resulted from the negotiated break-up of the Bell system, not market forces. In this sense, the RBOCs face severe, perhaps insurmountable, obstacles in serving the broader corporate market, hence the current merger mania.

In the past, computer vendors' architectures, such as IBM's SNA, Digital's DECnet and Novell's NetWare, defined the networking agenda. But looking ahead, it appears the telecommunications companies will play a bigger role. As corporations increasingly rely on the public infrastructure, the carriers are emerging as the dominant enterprise network partners — perhaps even the new systems companies.

Moschella is senior vice president of research at Computerworld, Inc. His Internet address is david\_moschella@cw.com.

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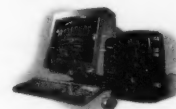
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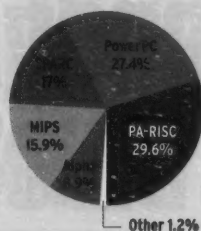
# Servers & PCs

Large Systems • Workstations • Portable Computing

## Briefs

### RISC SYSTEM REVENUE\*

1996 total: \$51.7 billion



\* By processor type

Source: "Inside the New Computer Industry," Current East.

### POP alliance

NetCentric Corp. last week said it signed an agreement with Compaq Computer Corp. in Houston to place NetCentric's POPware software technology on Compaq's ProLiant servers. POPware software lets Internet access providers offer their subscribers extended services — including faxing, telephony and video — over the Internet.

Compaq has also purchased a minority equity stake in NetCentric and will work with the Cambridge, Mass.-based developer on joint marketing and technology projects.

### HP cuts RISC prices

Hewlett-Packard Co. has joined the list of vendors that have recently cut RISC machine prices. The company has slashed prices by up to 40% across its Unix technical workstation line, according to a source close to the company.

For example, an entry-level B-class workstation previously priced at \$12,700 sells for about \$8,000 after the price cuts — a reduction of 37%. Similarly, prices on midlevel, C-class workstations have been reduced by 36%, from \$33,000 to \$21,000. Other companies that have cut prices since October include Silicon Graphics, Inc., Sun Microsystems, Inc. and Digital Equipment Corp.

### BIOMETRICS TECHNOLOGY

## Fingerprint security draws interest

By Sharon Machlis

PASSWORDS AND PINs may soon be passe at the Purdue Employees Federal Credit Union.

In about a week, the West Lafayette, Ind., institution expects to install fingerprint readers at some of its automated teller machines, hoping for a safer, more reliable way to ensure that customers are indeed who they say they are.

Biometrics — using physical characteristics such as fingerprints or retinal scans for identity checks — has been around for years. With biometrics, there is no worry about stolen or forgotten personal identification

### SECURITY SCANNER

Key Tronic keyboard fingerprint scanner



**Processor:** 133-MHz Pentium or higher

**Operating systems supported:** Windows 3.1, Windows 95 and NT

**RAM:** 16M bytes; 32M bytes recommended

**Price:** \$195

numbers. However, a combination of high cost and user unease has slowed adoption, making it a less common form of communication than simple passwords or passcodes augmented by a physical device, such as a smart card or digital token.

The Purdue credit union is using a new, relatively low-cost system developed by The National Registry in St. Petersburg, Fla., and Key Tronic Corp. in Spokane, Wash.

Once a customer's print is scanned into the system, the customer uses his finger (or, as The National Registry jokingly calls it, a "one-digit PIN") instead of an access code to tap in to his account.

Of more than 600 customers asked for their fingerprints to be put on file, "We only had one or two who said no. The members have embraced it," said Gail Koehler, manager of special projects at the credit union.

### ADMITTED TO HOSPITAL

Sarasota Memorial Hospital also plans to deploy the fingerprint scanning technology as part of a

Fingerprints, page 42

## More storage — and cheaper

By Matt Hamblen

Storage capacity on disk drives will double again later this year. Meanwhile, the cost per megabyte of storage is dropping.

That's all good news for users of PCs and network servers with seemingly endless storage appetites.

The 3 1/2-in. drive, the most common data storage device for PCs and network servers, grew from 1G-byte capacity in 1992 to 9G bytes today.

"It's essential for us to have those 9G-byte, 3 1/2-in. drives," said Rick Grafton, director of MIS at Cherry Communications, Inc., a long-distance telephone provider in West Chester, Ill., with 1 million customers. "For a company like ours that's growing, we have to have a high-capacity archive."

Storage, page 43

## EDS buys in to Unisys' ClearPath

By Tim Ouellette

WHEN EDS decided to consolidate 16 of its financial-related data centers into two, the direction for new hardware was pretty clear.

The Dallas systems integrator chose to replace its existing Unisys Corp. mainframes with two ClearPath HMP systems from Blue Bell, Pa.-based Unisys in an \$18 million deal announced recently. The deal hinged on ClearPath's ability to provide operating system flexibility with mainframe power.

ClearPath HMP (Heterogeneous Multiprocessing) combines a mainframe operating system domain — Unisys' MCP/AS — with a Windows NT server domain under one roof. It can also run applications written in Unisys' SVR4 or Unix-

EDS, page 42

• SGI line punches up performance, scalability

## Revving up midrange workstations

By Jaikumar Vijayan

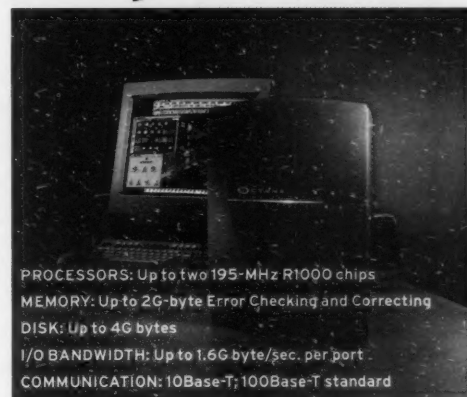
SILICON GRAPHICS, INC. (SGI) is offering users new levels of performance and scalability in the midrange technical workstation space. But it won't come cheaply.

Hoping to pull away from the Wintel hordes pecking at its low end, SGI last week introduced a midrange workstation family that features technology acquired from its purchase last year of supercomputer maker Cray Research, Inc.

This includes a so-called multiport crossbar switch technology that speeds up applications and substantially increases system bandwidth.

### SMOOTH OPERATOR

With entry-level prices starting at around \$25,000, the dual-processor Octane workstation offers performance not usually found in high-end Windows NT workstations with



**PROCESSORS:** Up to two 195-MHz R1000 chips  
**MEMORY:** Up to 2G-byte Error Checking and Correcting  
**DISK:** Up to 4G bytes  
**I/O BANDWIDTH:** Up to 1.6G byte/sec. per port  
**COMMUNICATION:** 10Base-T; 100Base-T standard

Intel Corp. processors, according to analysts.

"These systems are really, really fast," said Rhonda Olson, president of Rhonda Graphics, Inc., a computer animation and visual effects studio in Phoenix. "You are getting performance

you are usually used to seeing only on much bigger systems."

Users have "tremendous expandability and increased performance" in the midrange space with the Unix-based boxes, said Peter Lowber, an analyst

SGI, page 43

## EDS buys in to ClearPath

CONTINUED FROM PAGE 41

ware versions of Unix (see chart).

That was important as Electronic Data Systems Corp. saw its banking customers looking not only for mainframe processing services but also client/server application support.

At the same time, EDS and its customers had a lot invested in proprietary banking software written in Unisys mainframe code.

### UNISYS' CLEARPATH HMP FEATURES

- Two independent domains
- Supports Unisys Unix or Windows NT applications
- Supports existing MCP/AS or OS2200 (mainframe operating systems)
- Supports up to two internal Windows NT servers

"Legacy systems will never go away, but with Unisys going to the NT side, I think that the hardware is going to take care of developers' concern about true client/server development," said John Diogiovanni, national marketing director at EDS.

Unisys officials said this is the biggest ClearPath deal to date. ClearPath systems, which have been delayed from their original ship dates early last year, are just now rolling out to many large customers.

More than 300 small to midsize banks across the nation outsource their processing needs to EDS. The 16 existing bank-related processing centers will be

trimmed down to centers in Charlotte, N.C., and Plano, Texas, by year's end. Each center will run one ClearPath. The systems can run off up to eight separate CMOS-based processors and churn out more work than existing Unisys 2200 and A Series models.

ClearPath will let the centers keep the mainframe-based heavy-lifting duties, while getting a faster response to data requests via client/server systems. For example, the teller system will run off Windows NT Server in ClearPath and help bank officials and customers make quicker decisions about loans and investments.

Observers don't see ClearPath derailing a parallel effort by IBM's System/390

division to host Windows NT applications. Instead, the Unisys machines, introduced in phases last year, will give Unisys customers such as EDS a chance to upgrade and consolidate hardware.

"This will have the same effect [on existing Unisys customers] that new CMOS machines had on IBM's existing customer base," said Brian Jeffrey, managing director of International Technology Group in Mountain View, Calif.

# If Your Internet A Look This Good, You S



## Fingerprints

CONTINUED FROM PAGE 41

redesigned patient record-keeping system aimed at making data more secure.

Along with instituting privacy safeguards such as an audit trail so physicians know who has accessed their patients' medical records, the Florida hospital plans to install a fingerprint-reading system on a terminal in its physicians' lounge this spring.

"We are excited about it," said Jim Turnbull, vice president and chief information officer. "The price is so low." The keyboard/image scanner sells for \$195, and the "frame grabber" to process the scanned image is another \$365.

Christina Bertsch, an analyst at Venture Development Corp. in Natick, Mass., said the National Registry/Key Tronic system could be useful in some specific applications, such as financial and medical institutions.



## Storage

CONTINUED FROM PAGE 41

IBM's Storage Systems Division in San Jose, Calif., introduced the 9G-byte drive at the end of 1995, followed quickly by Seagate Technology, Inc. in Scotts Valley, Calif., early last year.

Many systems resellers package such

drives with new storage connections and sell them to information systems departments that are desperate to handle growing storage demands.

While the microprocessor has been essential to system speed, large-capacity drives are just as valuable to innovation and change in enterprise systems, analysts said.

And users want the bigger drives because they can be purchased for less than

their lower-capacity cousins cost a year earlier.

For example, IBM officials said their 3 1/2-in. drive costs dropped from \$1.50 per megabyte in 1992 to between 10 and 15 cents per megabyte today. However, the cost of a typical storage system with 9G-byte disks with redundant arrays and hardware interfaces could be as much as 50 cents per megabyte.

Cherry Communications recently

spent \$150,000 for an array of 9G-byte disk drives from Storage Dimensions in Milpitas, Calif.

Users on 300 PCs at Cherry Communications conduct half a billion transactions per month with stored billing data. "As our company grows, we need to have the disk space online," Grafton said. "And having those disks allows easy access to data kept for six months in the warehouse."

### STORAGE STATS

The history of 3 1/2-in. storage drives

Size	Released
1G byte	Early 1992
2G bytes	Q2 1993
4G bytes	Q2 1994
9G bytes	Late 1995
50G bytes	2000*

\*IBM's plan

Source: Peripheral Concepts, Inc., Santa Barbara, Calif.

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Later this year, IBM will begin releasing 18G-byte drives, and drives from 50G to 60G bytes in capacity will be available by 2000, said Vince Marrello, manager of the recording head department and research at IBM Almaden Research Center in San Jose, Calif.

## SGI workstations

CONTINUED FROM PAGE 41

at DataPro Information Services Group, Inc. in Lexington, Mass. (see chart, page 41).

"This means that users have the headroom to grow their applications for the next five years or so," said Karen Seymour, an analyst at International Data Corp. in Mountain View, Calif.

Particularly key is Cray's crossbar switch technology, which SGI first introduced on its high-end multiprocessing servers late last year. The switch speeds up application performance by allowing different components and devices — such as a graphics device — to directly access other components and devices. It also allows direct access between I/O devices and the CPU.

The crossbar switch offers far more bandwidth than current system buses. With a peak bandwidth of 1.6G byte/sec. per port, the seven-port Octane provides nearly 10 times the bandwidth of most workstations in this class, according to SGI.

The symmetrical multiprocessing support on Octane, meanwhile, lets users simultaneously run different applications — design and analysis, for instance — on the same system.


The announcement completes a massive product line transition that SGI began in October. Since then, the company has completely refurbished its entry-level and high-end workstation and server products while announcing massive price cuts.

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# Software

Client/Server • Development • Operating Systems

## Briefs

### Metadata manager

Intellidex Systems LLC, a start-up in Winthrop, Mass., has announced software for managing metadata.

Metadata is the explanatory data end users rely on to navigate data warehouses. The Intellidex Warehouse Control Center includes navigation and search facilities for users and administrative tools for warehouse managers. The software was developed for internal use at BankBoston Corp. in Boston. It costs \$40,000.

### HP/Hitachi Unix pact

Hewlett-Packard Co. and Hitachi Ltd. last week agreed to jointly develop enhancements to HP's version of Unix. One of the key enhancements will be a capability that lets users reconfigure servers without having to switch them off. The first improvements are slated to appear in new releases of HP-UX later this year.

### 'E-signature' for Word

PenOp, Inc. in New York, a maker of software that captures and verifies handwritten signatures, has released an add-in module for Microsoft Corp.'s Word that lets users sign electronic documents. The component allows an author to specify where signatures should appear on a page, the names of the signatories and the reasons for signing. A runtime license costs \$100 per CPU.

### LOTUSPHERE

## Third parties fill Domino tools gap

By Barb Cole  
ORLANDO, FLA.

THE LACK of strong server management tools for Domino has users of Lotus Development Corp.'s Internet server turning to third parties to plug the gap.

Users say those tools are key to deploying bulletproof applications. Domino is a version of the company's messaging server that also can act as a World Wide Web server. Lotus offers NotesView, a graphical application for tracking replication sessions and monitoring the general health of a server. But NotesView doesn't provide some features important to Web server administration, such as tracking the number of visitors to a Web site.

Several third-party developers already offer management tools that drill down into Domino, and a half-dozen more announced offerings at Lotusphere 97 here.

"This issue [of management] is becoming bigger as companies look to deploy Domino as a Web server," said Michael McGhee, director of administrative computing at the University of Nevada, Las Vegas, which has a campuswide license for Notes. He said that in the Web environment, the large and often unpredictable volumes of users can

Third parties, page 46

## Users getting Web-enabled

By Lisa Picarille

NOW THAT most of the major business-productivity suites have facilities that streamline access to the World Wide Web, users are finding new ways to share information.

At Dow Chemical Co. in Midland, Mich., for example, the presence of an intranet means that "almost every department is publishing a Web page," said Jack Robinson, a research associate in Dow's computing, modeling and information sciences department.

"There's all kinds of stuff that I never knew before about

Dow," Robinson said. The company has more than 30,000 PCs that run Microsoft Corp.'s Windows 95 and Office. "People are publishing obscure manuals, documentation — you name it," he said.

"The Web is a big feature for us," said Mike Wolfe, a network software engineer at Chevron Information Technology Co. in San Ramon, Calif.

The company uses Office 95 with Office Assistants — the Web capabilities available as an add-on to Office or built in to Office 97 — to create Web-enabled documents that can be accessed via Lotus Development

### THE BASICS ARE THE SAME

Vendors implement Web features within productivity applications differently, but all include the ability to:

- ☐ Launch a browser from within application
- ☐ Automatically convert older documents to HTML
- ☐ Create documents in HTML for publication on the Web
- ☐ Import data and documents from the Web
- ☐ Embed URLs in documents

Corp.'s Notes and Domino.

Microsoft, Corel Corp. and Lotus have added similar Web-enabled features to several of their suite applications, Web-enabled, page 46

## Small advances add to appeal of Access 97

► Enhancements bring performance closer to that of DOS databases

By Jeffrey Gordon Angus

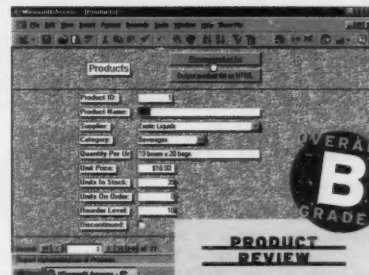
SIX YEARS into Windows' dominance as a desktop operating system, Access 97, the just-released version of Microsoft Corp.'s Windows database, still hasn't revolutionized the database market. But it does have some significant advances that make it appealing.

There are two primary reasons why Windows databases have yet to become as widely used as their DOS predecessors. First, the programming languages used in Windows database applications are lower-level than the Cobol-like or Basic-like

database code found in DOS versions. Second, Windows databases have been horribly sluggish and memory-intensive.

Access 97 addresses the first limitation to some degree and the second — performance — quite well.

The performance of Access 97 is better than that of previous versions. It has better online help, and it has a solid core of sought-after Internet integra-



Microsoft's Access 97 is faster and has better online help and more Internet features than previous versions

**Access 97**  
Microsoft Corp.  
Redmond, Wash.

**PROS**  
• Performance gains  
• Internet extensions

**CONS**  
• Still relatively slow  
• Help can be confusing

**Availability:** Now  
**Price:** \$399; \$109 upgrade

database.

The development environment for Access 97, Visual Basic for Applications (VBA), is much faster than those DOS products. Once you know the rudiments of VBA, you can code about 50% faster with Access 97 than you can with the DOS products. I liked several of VBA's coding features, especially the syntax specifications that pop up next to your code as you write it.

The online help outside the programming environment is significantly better than in previous Access versions. Credit for that goes to Office Assistant, a

Access 97, page 48

## Warehouse managers squeezed by user demand, limited systems

By Craig Stedman

DATA WAREHOUSE managers are struggling to meet end-user demands for access to more and more production data without exceeding storage budgets or stretching the limits of their systems.

Most companies can't afford to stash all the data that comes from their production systems in decision-support

warehouses, said attendees at The Data Warehousing Institute's annual conference in San Diego last month. But the need to weed out data could cause problems if end users want information that didn't make the warehouse cut.

That conundrum is prompting warehouse managers to search out flexible approaches that also are technically feasible.

Warehouse, page 46



# Warehouse managers squeezed

CONTINUED FROM PAGE 45

End users undoubtedly will want access to more data than MCI Communications Corp.'s business markets group is putting in an upcoming warehouse, said Michael Wade, senior manager of revenue reporting systems at MCI in Atlanta.

The warehouse will be heavily summarized because replicating MCI's huge volume of telephone call records is inconceivable, Wade said. "We have 30 mainframes as potential sources of data, and there's no hope of ever rehosting all of that" in the warehouse, he said.

But the summaries "can miss some of the subtle variations" that end users need to see, Wade said. To compensate, he is con-

sidering building links that would let users run queries against the raw mainframe data via store-and-forward messages that would be held until off-hours. But he doesn't know if that will work.

That sort of "virtual warehouse" concept also appeals to Barry Rooker,

who manages a corporate data warehousing project at BellSouth Corp. in Atlanta. BellSouth faces the same kind of data overload as MCI, Rooker said.

## OUT OF REACH

But other warehouse managers said their companies want to keep end-user queries as far

from the mainframe as possible (see chart). They are trying to juggle demands for access to nonwarehouse data case by case.

Don Groessner, senior manager of decision-support systems at Union Pacific Co. in Omaha, said some of the railroad's end users still can get into the mainframe and create their own mini-databases for decision support.

"But when we find out about that, we try to integrate [the desired files] into the data warehouse in order to minimize usage on the mainframe," Groessner said. "Any time we can have a cost reduction on the mainframe, it's good for the company."

## HANDS OFF!

Why you should prevent end users from querying production databases

- Queries eat up expensive mainframe processor cycles
- Data in production systems isn't cleaned or tuned for querying
- IS personnel often have to write mainframe queries for end users
- Opening up production data creates security risks

Workers Compensation Fund of Utah initially will put about 25% of its mainframe data in a warehouse that is due to go live this month, said Gary Midgley, database administrator at the insurance company in Salt Lake City. But end-user demand for data "will really balloon up from there," he said. Eventually, 75% of the mainframe files are ex-

pected to go into the warehouse.

Storage capacity isn't a problem, but feeding updates into the warehouse could get unwieldy, Midgley said. "How we're going to keep the warehouse fresh is a real concern right now," he said. "We're going to need a big window to move that much data between the two platforms."

# Web-enabled suites ease access

CONTINUED FROM PAGE 45

including word processors, spreadsheets, calendars and scheduling. Although the features are implemented in different ways, they accomplish the same basic tasks, such as exporting data as a Hypertext Markup Language (HTML) file to the Web or importing data from the Web. They can also convert older documents to HTML format and launch a Web browser from within an application.

Yet even proponents of Web-

enabled productivity software said the problem isn't publishing to the Web so much as finding easier ways to manage and search for information.

## NO DEDICATION

For instance, Dow uses its base desktop configuration of a Windows 95 PC running Office and electronic mail to give users access to other software, without the need for a dedicated client version of the application.

Robinson said it would be too expensive to give each user a copy of PeopleSoft's human resources package. But because information can be published to the company intranet, employees can use the applications in Office to access and even add information to the human resources Web page.

Still, not everyone is impressed by Web access features in the suites. Some industry watchers and users said Web-

enabled features in most productivity suites aren't widely used yet.

"Right now, it's just a checklist item for me," said James Bolgna, a senior network manager at Bentley College in Waltham, Mass., which has more than 2,500 Office users.

"But in the next couple of years, I plan to use more of the features so that I can share information with co-workers," Bolgna said.

Bentley eventually hopes to use Office's Web features to allow students to publish their work on an intranet site, Bolgna added.

Jeff Tarter, editor of "Softletter," an industry newsletter in Watertown, Mass., said besides the Web-enabled features, there isn't much in the suites to justify an upgrade.

But Tarter said even if only a small percentage of people use the Web features, those using the features are likely to be "very influential within their companies."

"If the [chief financial officer] decrees that the company's spreadsheet has to be group-enabled and able to publish data on the Web and extract data from the Web, then it happens," Tarter said.

# Third parties fill Domino tools gap

CONTINUED FROM PAGE 45

put a strain on application servers and significantly slow access.

Although Domino stores a

wealth of management data within its server, the information can be hard to get at without costly custom program-

ming, users said. As a result, "if your [Domino] server goes down and you're not watching, you may never know," said an

administrator of a 27,000-seat Notes installation at a large manufacturing company.

## MANAGEMENT SUPPORT

Last September, Lotus announced that eight management-tool vendors — including Hewlett-Packard Co. and Sun Microsystems, Inc. — pledged support for Notes servers in their offerings.

The management products announced last week at Lotusphere range from traditional monitoring tools to systems such as GroupWedge & Partner GmbH's WatchDog Light, which scans for mail bombs and viruses.

## MORE PRODUCTS

Some product highlights include the following:

■ **Candle Corp.** in Santa Monica, Calif., announced IntelliWatch Analyzer for Lotus Notes, which generates reports based on

historical management data.

The company also rolled out a version of its IntelliWatch Monitor for Domino 4.5, which automatically detects and corrects core Domino server problems.

■ **DYS Analytics** in Newton, Mass., announced DYS Analyzer 1.5, which is aimed at managing Domino replication.

■ **Percussion Software, Inc.** in Stoneham, Mass., announced Notrix Spyder, which tracks and controls Web site traffic.

■ **Brainstorm Technology, Inc.** in Cambridge, Mass., announced ServerAdmin Plus Enterprise R4.0, which does security audits, server and database management and performance monitoring on Domino servers.

■ **Software Cafe, Inc.** in Rainbow City, Ala., announced Crash Control Version 2.0, which network administrators can use to restart a crashed Domino server.

## BULLETPROOFING DOMINO

Domino add-on products announced at Lotusphere

Company	Product	What it does
Brainstorm Technology	ServerAdmin Plus Enterprise R4.0	Security audits, server management and performance monitoring
Candle	IntelliWatch Analyzer for Lotus Notes IntelliWatch Monitor for Domino 4.5	Generates reports based on historical management data Detects and corrects core Domino server problems
DYS Analytics	DYS Analyzer 1.5	Manages Domino replication
GroupWedge & Partner	WatchDog Light	Checks for viruses and mail bombs
Software Cafe	Crash Control 2.0	Restarts downed Domino servers

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## FRANKLY SPEAKING

## Why are you upgrading?

FRANK HAYES

**W**HY DO WE lose our minds when it comes to software upgrades?

*Item:* A hotel chain upgrades the sales force automation software it uses to sell banquet space and catering services. But the new version requires Windows 95, which demands more powerful hardware. Support people end up cannibalizing the PCs of administrative assistants to make the upgrade possible.

*Item:* A funeral home chain upgrades the aging DOS-based

software it uses to plan funerals and print government forms. But the Windows-based upgrade requires more user effort to generate the forms, and most of the new features require extra hardware, such as scanners, that isn't in the budget.

*Item:* A chain of florists decides to upgrade the PCs in each shop with multimedia sales software. But users complain that

the primary function of the computers — sending orders to other shops on the network — won't be improved by the expensive upgrade.



Somehow, we lose any semblance of sense when it's time to bump software up to a new version. Whether it's Microsoft's Office 97 or a new release of internally developed software, we get stupid.

IS gives users things they don't want. Users demand things they don't need. And everyone loses sight of the goal of making users more productive and the organization more competitive.

Sure, some upgrades will be a success no matter how little thought they receive. Others will fail no matter how carefully you plan.

But if you sit down with users to identify all costs and benefits

of an upgrade, you may make a big difference in whether it flops or flies.

Will the software upgrade require new hardware? An operating system upgrade? Will those upgrades force you to upgrade other software? What will that ripple effect cost?

How much retraining will the new software require for users and support staff? What will it cost to install the upgrade, test it and get users up to speed?

Does the new software do everything as well as the previous version? Does it drop capabilities users need? Will the new functions really be useful — or just expensive frills?

Do you have a hidden agenda in upgrading? Will the upgrade make systems easier to manage but slow users down?

Are there hidden costs in not upgrading? If you don't stay current, you may eventually discover you need the latest version of a package — to solve the year

2000 date problem, for example. But getting to the release you need may require a whole series of upgrades, each with its own costs and potential problems.

After you've put the pluses and minuses on paper, require the line managers to sign off on the cost/benefit analysis before the upgrade goes forward. That way, they can't say they didn't know what they were facing.

Incidentally, those items at the beginning of this column are from real users. The hotel chain bit the bullet and shuffled the hardware. But the funeral homes eventually rolled back to the earlier version. And the florists spiked the upgrade — and dumped their CIO. When it comes to software upgrades, you can lose a lot more than your mind.

*Hayes is Computerworld's staff columnist. His Internet address is frank\_hayes@cw.com.*

## Access 97

CONTINUED FROM PAGE 45

feature intrinsic to Microsoft Office 97's online help. The Assistant is a cartoon character agent with its own small window. It fields your English language queries and frequently returns a list of appropriate help topics. It isn't perfect, but it is a mile ahead of other natural language interpreters I have seen.

## NOT MUCH HELP

The greatest weakness in the online system is how it deals with the experience range of Access users. The help system frequently lists topics intended for the wrong category. For example, end users are often fed programmer-oriented help. That makes everyone waste through topics they aren't interested in, and it exposes end users to confusing and intimidating information.

Finally, the printed documentation includes the most useful book Access has ever had. Anyone with a little programming training can pick up the book and easily produce working code.

Microsoft includes some very useful Internet-integration features with Access 97 that can help fulfill the needs of buyers who work from feature checklists. Still, there's plenty of room for the product to grow in the Internet area.

You can save and publish tables, queries and forms (curi-

ously, though, not reports) to Hypertext Markup Language (HTML). You can use or modify provided templates or build your own. HTML publishing is all done through a timesaving wizard, but there was a bug in this version: I didn't always receive output completely formatted to the template's specifications.

Publishing pages, though, is quite flexible. You can print static pages for the situations where your output (such as archived information) rarely changes after it is published. Alternately, you can create dynamic pages where the program reflects information changes. For example, the page will use the database engine to show inventory changes so that customers will know whether a product or part is in stock. Both types of pages worked as advertised.

You can also use hyperlinks in your Access applications, effectively extending the reach of the program beyond your immediate network.

I have never been overwhelmed by Access, but Access 97, with its improved help system and development environment, its noticeable performance improvements and its sensible Internet capabilities, is as strong as other Windows databases. It doesn't knock Paradox or Lotus Development Corp.'s Approach out of the box, but most customers will find it the equal of those.

*Angus is project director at The Data Works Ltd. in Seattle.*

## DEVELOPMENT TOOLS

## Oracle tools help build Web applications

By Rebecca Sykes

ORACLE CORP. last week announced Oracle Web Developer Suite, a set of development tools and servers for building and deploying business applications in client/server and intranet systems.

The suite is the first tool set that works with Oracle's network computing architecture, said officials at the Redwood City, Calif.-based vendor.

The suite costs \$1,495 and includes licenses for the following products:

- Web Application Server, an

application platform that maintains database connections. The server enables the deployment of software cartridges on a middle-tier application server, officials said.

- Developer/2000, a client/server and World Wide Web application development tool for data publishing over intranets and the Internet.

- Designer/2000, a tool integrated with Developer/2000 to generate Web applications and dynamic Hypertext Markup Language applications through the Oracle Web Application Server.

- Oracle7 Enterprise Server, a relational database server that provides secure data management for applications.

- Oracle InterOffice, Web-based collaboration software that includes electronic mail and document management.

- Network Computing Architecture Cartridge Software Development Kit, which helps developers create cartridges that plug in to clients, application servers or database servers, officials said.

*Sykes writes for the IDG News Service in Boston.*

## SHORTS

## Web publishing tool

Seattle-based Design Intelligence, Inc. recently posted a free beta release of its I Publish on its World Wide Web page (www.design-intelligence.com).

The software lets users merge a wide range of text and graphics formats to automatically create documents. The product will be available in April and will cost \$149.

## TCP/IP over SNA

Atlan Software Ltd. in Israel has announced software that users connect to Internet nodes over an SNA backbone. IntraNode, which is installed on each LAN server in a network, makes SNA look like virtual TCP/IP and helps

users maintain an existing infrastructure while gaining TCP/IP capabilities. IntraNode costs \$1,600 per node.

## HP preloads R/3

Hewlett-Packard Co. has announced it will preload SAP AG's R/3 application for users of Unix and Windows NT clients. The move is intended to save companies the time it takes to install R/3 and avoid the disruption of installing application packages on-site.

For the service, customers must first give HP a blueprint of their specific needs and technical requirements. HP will install and test the system to customer specifications before delivering it. HP's integration site in Roseville, Calif., is scheduled to begin the service in the spring.



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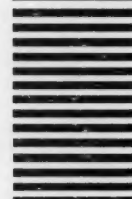


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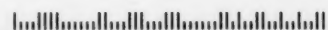
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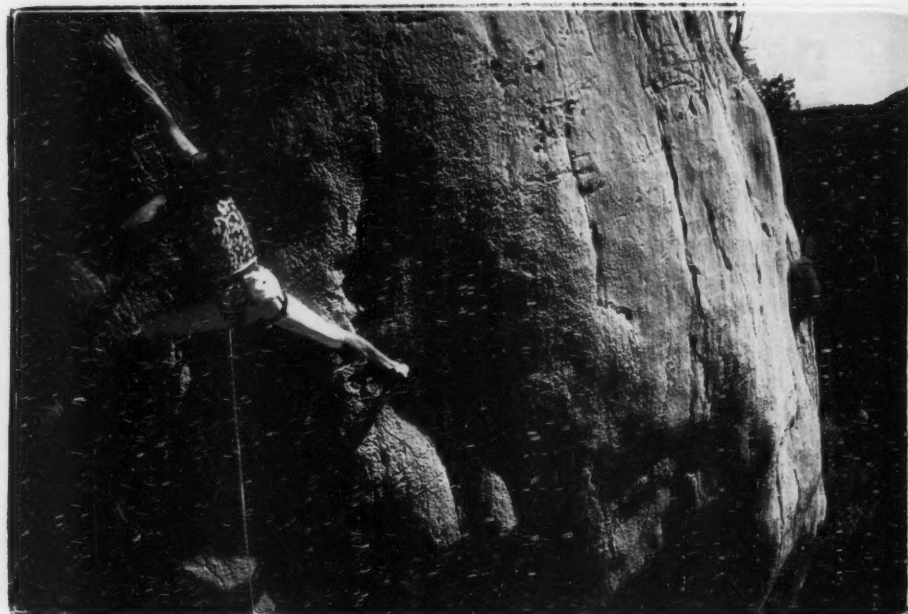
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## Briefs

### Candle adds AS/400

Candle Corp. last week announced plans to extend its systems management coverage to IBM's AS/400 servers. Beta tests are under way for OS/400 agents that monitor RISC and non-RISC versions of the operating system and for OS/400 server software.

Administrators who use the Candle Command Center for Distributed Systems will be able to track the performance and availability of their AS/400 systems beginning this spring. They will be able to monitor disk and database capacity, CPU utilization, virtual and physical memory, I/O activity and systems response time.

### Special IntranetWare

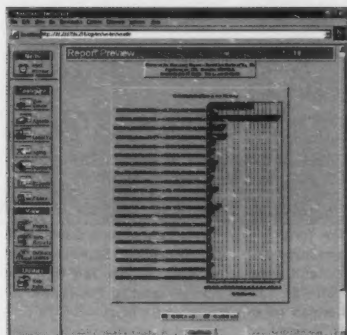
Novell, Inc. last week announced a specially priced version of its IntranetWare bundled network operating system and World Wide Web server software aimed at small businesses. IntranetWare for Small Business lets small companies buy licenses in small quantities as they need them. The list price is \$895 for a server and five-user license. It costs \$65 to add a single user license. The package will be available Feb. 14.

### Cisco speeds access

Cisco Systems, Inc. plans to fold newly unveiled 56K bit/sec. technology into its AS-5200 universal access server. Microcom, Inc. is integrating the modem technology in Cisco's latest servers, which are expected to ship in the first half of this year.

### Intel buys vendor

In a move to expand its networking product line beyond Fast Ethernet hubs and adapter cards, Intel Corp. last week announced plans to buy Ethernet switch and router vendor Case Technology in Copenhagen for \$72 million. The companies will develop a line of products, including a low-cost Fast Ethernet switch. Intel currently resells a Fast Ethernet switch from Nbase Communications, Inc.



Vendors such as Frontier have extended monitoring standards to cover more connections

## Tough choice: Rmon 2 vs. proprietary add-ons

By Patrick Dryden

INFORMATION SYSTEMS managers face a tough choice about how to track application activity throughout distributed client/server networks.

On one hand is technology that is standards-based but limited; on the other hand are proprietary implementations that add power.

The dilemma is that Remote Monitoring (Rmon) standards independently provide "helpful information, but the really valuable data comes from custom extensions," said Darrell Epps, a communications engineer at Chevron Information Technology Co. in San Ramon, Calif.

The second generation of the Rmon 2 specification was recently finalized as a Rmon 2, page 51

## Cisco router module cuts WAN costs

► Plug-in boosts port count, adds dial-up ability

By Bob Wallace

AN ADD-ON to Cisco Systems, Inc.'s 4500 and 4700 midrange routers will cut the cost of supporting wide-area network links by a third and, for the first time, let the boxes support dial-up remote workers.

The San Jose, Calif., vendor this month will ship a new Network Processor Module (NPM) — an \$8,800 plug-in that increases the number of ports on the routers from eight to 36.

"They've dropped the per-port cost from roughly \$1,500 to \$500, which is a big win for us,"

said Al Teasdale, a senior technical analyst at The Ministry of Employment and Investment in Victoria, British Columbia. "And we found the 4500 and 4700 attractive because they have features that support advanced SNA networking."

The ports can be used to support synchronous WAN links

Router, page 52

## Hot

The small office/home office market craves network connections, based on a survey of nearly 700 small office/home office sites

● Spending for LANs, modems and remote access gear will jump from \$3.6 billion in 1996 to \$12.6 billion in 2000.

● Penetration of networking products will grow from 29% of all U.S. small office/home office businesses in 1996 to 84% in 2000.

● Employees spend nearly half of a normal workweek accessing the Internet and other sites or services.

Source: Infonetics Research, Inc., San Jose, Calif.

## Wireless costs under attack

► Motorola's AirMobile products address issue

By Mindy Blodgett

IN THE LATEST release of its AirMobile wireless software, Motorola, Inc. targets the concerns many users have about the potentially high cost of wireless data transfers.

Cost and interoperability problems among carriers have dragged down the number of users interested in wireless applications, analysts said.

But the leading carriers have signed interoperability agreements in the past year. Now

Schaumburg, Ill.-based Motorola said it is attacking the cost issue.

AirMobile Wireless Software for Lotus Development Corp.'s CC:Mail, which is used on laptop computers, now allows users to more closely track the amount of data AirMobile clients send. That should help keep track of costs, according to Motorola officials.

"You don't see large amounts of corporations using wireless data because of the cost. This

Motorola, page 52

### Features of AirMobile 2.0 for CC:Mail

**Select and summary** — Lets users preview the author, subject and size of an E-mail message

**Budget manager** — Gives users the ability to track data volume during software sessions

**Data control** — Lets server administrators control costs by setting limits on the amount of data that can be sent monthly

### ROUTER RAMPAGE

U.S. midrange router revenue

1995	\$1.1B
1996	\$1.55B
1997	\$1.91B*
1998	\$2.13B*
1999	\$2.32B*
2000	\$2.48B*

\*Projected

Source: Dell'Oro Group, Portola Valley, Calif.

## WIRELESS SYSTEMS Delayed satellite launch hampers global network

By Mindy Blodgett

THREE TIMES in the past month, mechanical problems have scrubbed the launch of satellites for the Iridium wireless communications system, delaying indefinitely the network's rollout, officials at Iridium LLC said last week.

In each case, the mission control crew detected a glitch or malfunction just before the takeoff of a McDonnell Douglas Delta II rocket from Vandenberg Air Force Base in California. The satellites are the first of 66 Iridium will launch in a \$5 billion bid to create a global telephone and data transmission network.

Iridium will aim its service at large corporate customers, said

Delayed launch, page 51

## NEW PRODUCTS

**DISTINCT CORP.** has announced Distinct IntraNet Suite, a family of Internet and intranet programs for Windows NT and Windows 95. The suite includes a World Wide Web browser and integrated IBM/Digital Equipment Corp. terminal emulation.

According to the Saratoga, Calif., company, the suite includes NFS 95 for file and printer sharing across networks; NetRover, Internet access software; IntelliTerm, terminal emulation software; and IntraNet Servers, software that lets information systems managers use PCs to share resources.

Distinct IntraNet Suite costs \$425.

**Distinct**  
(408) 366-8933  
www.distinct.com

**ASCEND COMMUNICATIONS, INC.** has announced the NetWarp Pro Integrated Services Digital Network (ISDN) terminal adapter. The product is for telecommuters and others who want analog phone capability with high-speed ISDN Internet access.

According to the Alameda, Calif., company, the product fea-

tures an analog port that provides telephone service with full-ring and dial-tone generation capabilities. Users can connect a phone, fax or answering machine to the product. They can simultaneously use the World Wide Web and make analog calls over a single ISDN Basic Rate Interface line.

The product costs \$349.

**Ascend**  
(800) 242-3634  
www.ascend.com

**SOURCE III, INC.** has announced new translation features for VTRAN 4.0, a computer-aided engineering program used to translate logic simulation data between two environments.

According to the Cameron Park, Calif., company, VTRAN 4.0 translates comments from the input file to the output file and has a Check Window command to mask commands outside a specified window during a cycle. A new licensing option lets users run the program from any local network node.

VTRAN 4.0 costs \$4,500.

**Source III**  
(916) 676-9329  
www.sourceiii.com

## Delayed launch

CONTINUED FROM PAGE 51

Michelle Lyle, a spokeswoman at Iridium.

By using \$3,000 handsets and paying \$3 per minute, users will be able to communicate via voice, paging and electronic mail from anywhere in the world, Lyle said.

Governments and users in remote areas without cellular capabilities also will be targeted, she said.

### GOING ELSEWHERE?

Iridium may now consider seeking a launch through a company other than McDonnell Douglas.

"We are still awaiting information from McDonnell Douglas, and we have confidence they can solve the technical problems," Lyle said. "But we are not ruling out using another company for the launch."

But she said the company still expects to have the global network up and running by fall 1998.

But because of increased cellular capabilities and the advent of global technology standards, industry analysts wonder whether a large audience remains for the Iridium technol-

Iridium is owned by companies from 14 nations. Motorola owns 25% of the company

ogy first introduced in 1990.

"I have mixed feelings about how viable this technology will be in the long-term," said Andrew Seybold, editor of "Outlook on Communication and Computing," a newsletter in Boulder Creek, Calif.

"But we aren't going to know until they get the system up and running," Seybold said.

## Motorola addresses wireless costs

CONTINUED FROM PAGE 51

kind of product makes wireless more attractive," said Mike McGuire, an analyst at Dataquest in San Jose, Calif.

Amelio Perez, director of production management at Natural Gas Pipeline Co. of America in Lombard, Ill., has used the AirMobile software and said he is looking forward to the Windows

# Router add-on cuts costs

CONTINUED FROM PAGE 51

that are used for regular data networking, as well as asynchronous links for remote access applications.

"This is definitely a useful move for us because we need the ability to support more remote workers off these routers and [have] greater WAN support for our backup site," said Mark Maxwell, vice president and global systems manager at long-time Cisco user Fuji Capital Markets Corp. in New York.

Adding asynchronous dial support to the 4500 and 4700 also means users with older Cisco routers don't have to go to top-of-the-line 7500 systems to support hordes of remote workers.

"The cost of trading all the way up to the [high-end] 7500 would be extremely expensive, which is why the NPM for the midrange 4500 and 4700 looks so good," Teasdale said.

### SAVING BANDWIDTH

The new NPM also will let users off-load remote access users from high-end servers to the 4500 or 4700 to save horsepower on the high end.

Fuji Capital moved two dedicated Integrated Services Digital Network Primary Rate Interface lines — among the fastest remote access links — off its core router for just that reason.

"We didn't want to run out of steam on our [high-end] routers,

so we made the move," Maxwell said.

Earlier NPM supported four ports each; the newer ones support 18. That is two 1.54M bit/sec. T1 or 2.05M bit/sec. E1 connections and 16 lower-speed asynchronous/synchronous ports.

The 16 lower-speed ports are individually configurable as synchronous WAN ports for speeds of up to 128K bit/sec.; or as asynchronous ports for modems, terminals or specialized gear at speeds up to 115K bit/sec.

The 4500 and 4700 each have three slots that can house NPM, though typically only two are used. The third usually is needed to support a LAN.

## Rmon 2 opens the door

CONTINUED FROM PAGE 51

standard although few compatible reporting products are available. When such gear ships, any Rmon 2 software will be able to gather valuable performance information from devices from many vendors.

The Rmon 2 standard promises interoperability, so many products can examine end-to-end usage of applications. The original Rmon enabled multi-vendor products to examine packets and traffic only within individual network segments.

"For the first time, we can see beyond basic bandwidth utilization to find out which clients in which buildings are doing what," said Joe Askins, director of data communications at Arizona State University in Tempe.

Openness in management is dogma to many IS managers. They demand, or follow dictates to buy, only standards-based products to avoid getting locked in to a single vendor.

But vendors have enhanced

Rmon on their own in the past two years to add power and gain competitive advantage. They have added support for topologies beyond Ethernet and Token Ring and pushed their analysis from the network plumbing into application activity. This means users required a single vendor's hardware and software to gain the performance information they desired.

"Every vendor you talk to has his own extensions beyond Rmon and Rmon 2, which really are lowest common denominator standards," Epps said.

Chevron hopes to eventually move away from any proprietary monitoring solutions to standard Rmon/Rmon 2 tools, he said.

So far, network management vendor Concord Communications, Inc. and integrator International Network Services, Inc. have launched monitoring software that can analyze Rmon 2 data. Each supports upcoming

Rmon 2-compliant products from 3Com Corp., Bay Networks, Inc., Frontier Software Development, Inc. and Hewlett-Packard Co.

The major hurdle to overcome is that "Rmon 2-type monitoring has been fully supplied by single vendors in the past, so few standard agents are out there," said Bob Sakakeeny, an analyst at Aberdeen Group, Inc. in Boston.

Askins said he hopes 3Com implements Rmon 2 in a Fiber Distributed Data Interface hub so he can directly analyze traffic on the campus backbone from Concord's software.

But vendors such as Frontier have provided such support in their proprietary monitoring tools for years.

The emerging open tools and the established custom versions will overlap and complement one another, said officials at Frontier in Chelmsford, Mass. But vendors will still build on the "good foundation of the Rmon standards" to add more information through customized agents.

on a 25-user license.

The new version includes the following features:

- A budget manager that lets users track data volume during sessions to monitor costs, and enterprise server software features that let server administrators set limits on the amount of data sent.

- A select and summary feature that lets users preview electronic-mail messages by author, size and subject.

- Support for Windows NT.

and whether it would actually work," Perez said.

"But so far, it's worked quite well, and they like having the wireless capabilities — it's easy and fast," Perez said.

The updated version will cost between \$150 and \$175 per user

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## Briefs

### WORLDWIDE INTERNET E-MAIL REVENUE



\*Projected

Source: International Data Corp., Framingham, Mass.

### Publishing updates

Netscape Communications Corp. announced new versions of its Publishing System, for posting newspapers and magazines on the Internet, and Merchant System, for building Internet storefronts. Publishing System 1.6 supports public and private bulletin boards and enhanced searching. Merchant Server 1.6 supports credits, refunds and address verification.

### Web access

Infodata Systems, Inc. in Fairfax, Va., announced Virtual File Cabinet (VFC), server-based software for using the World Wide Web to access and share information stored in document management systems. VFC lets browser users access VFC-enabled document repositories, including those from PC Docs, Inc., Documentum, Inc. and Verity, Inc. Pricing will start at \$15,000.

### Vanity domains

Interport Communications Corp. offers vanity domains for its individual dial-up users. Users can select a domain name and be known by that address — provided the address hasn't been claimed by someone else on the Internet. Interport, which serves the New York metropolitan area, will offer the service to its basic consumer accounts, which cost \$25 per month. Interport will charge no extra fees for the vanity domains, but users will have to pay \$100 to Network Services, Inc., the company that keeps track of domain names.

## 'net isn't always the ticket

► Online travel services don't go the distance

By Mitch Wagner

COMPANIES THAT want to use the Internet to book their business travel shouldn't put their travel agents on the next one-way flight to Bora Bora just yet.

Internet-based travel systems won't replace travel agents any time soon, if at all, said corporate information systems managers who are experimenting with the technology. But Internet systems can help bring about great savings in time and money if they are used — when appropriate — by business travelers.

### TIME TO ADJUST

"People aren't going to change things that quickly. We're creatures of habit as human beings," said Michael Brent, president of Travel Network Ltd. in Englewood Cliffs, N.J., a travel agency chain that offers bookings over the Internet.

The Internet-based systems were designed to save companies money by making it easy for employees to conform to business-travel guidelines.

At companies that hire agen-

cies to arrange business travel, many employees cost their companies money because they are unaware of specially negotiated travel rates or they buy tickets through channels other than the approved corporate travel agent, experts said.

But first, companies have to persuade their employees to use the Internet-based systems.

Some employees are afraid of computers, Brent said.

And many of the best travel deals aren't available electronically. For instance, international airline tickets are often resold at a substantial discount in a secondary marketplace called "consolidated tickets." Those tickets are available through word of mouth and via faxed and printed publications.

And there will be circumstances where the Internet isn't conveniently accessible, said Richard Siemborski, vice president of the interactive travel group at American Express Co.

"If you're scurrying around the airport and your plane gets canceled, you're not going to boot up your PC. You'll call a hu-

Travel systems, page 58

Vendor	Travel option
Internet Travel Network	Intranet-based corporate travel service; available now.
The Sabro Group	Internet-based front end to its reservations system. It currently runs on proprietary Windows client software.
American Express and Microsoft	Jointly building the American Express Interactive system. The project will be in beta by Q2 and will be available by June.

## Intelligent agents may boost browser speed

By Justin Hibbard

SOFTWARE FOR accelerating Web browsers should work smarter, not harder.

So say users who have clicked through hundreds of World Wide Web pages downloaded by off-line browsers and Web server administrators whose systems have buckled while serving those pages. A handful of soft-

ware developers are working on intelligent agents to improve the efficiency of browser acceleration software.

Most browser accelerators work by simultaneously downloading multiple Web pages and storing them on a user's hard drive. The browser can then display the pages faster because it doesn't have to download them one at a time.

Giga Information Group predicts intelligent agents will be incorporated in all significant software applications by 2000.

### LESS TIME ONLINE

But multiple requests can overload servers, systems administrators said. Intelligent agents speed browsing with minimal caching, developers claimed.

Browser accelerators can boost efficiency by reducing time spent online, said Diane Bradford, a senior consultant at Prime Resource, Inc. in Denver.

An accelerator cut in half the time Bradford spends on the Web. But Bradford warned that an intelligent agent will speed browsing only if users repeat the same browsing patterns daily. That's because developers program their agents to learn from users' navigational habits.

IBM, for example, is developing a Java-based intelligent browsing application that tracks a user's browsing patterns

Intelligent agents, page 58

## Media Web sites struggle to meet demand

► Time, Inc. picks Cnet's scalable server

By Mitch Wagner

TIME, INC. NEW MEDIA has licensed server software from Vignette Corp. as a means of getting the news out faster to viewers of its Pathfinder site.

The deal comes as companies with large media sites such as Time's scramble to find ways to keep pace with hundreds of thousands of hits per day.

Time, Inc. New Media will use Vignette's StoryBuilder on its Netly News site (pathfinder.com/netly), which carries daily news about the Internet and its

culture to subscribers.

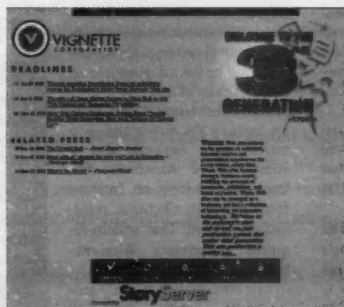
"Our most general goal is to separate the content from the formatting in a way that is scal-

able and easy to manage," said Shadrach Todd, manager of systems development at Time, Inc. New Media in New York, which produces the Pathfinder site.

StoryBuilder was designed to combine the virtues of static pages — unchanging pages made up of hand-coded Hypertext Markup Language (HTML) — and pages built on the fly from a database of information.

World Wide Web servers that deliver information from databases allow corporate users to post more information — and more up-to-date information — than static Web pages. Such servers

Server software, page 58



Vignette was designed to help users manage high-traffic Web sites

## Intelligent agents speed browsing

CONTINUED FROM PAGE 57

and suggests shortcuts.

The Web Browsing Intelligence (WBI) application also automatically checks favorite Web pages and caches them only when they change.

John Williams, course coordinator at Otago University in Dunedin, New Zealand, said he has tried two alpha versions of

"From what I've seen of off-line Internet tools, they just download megabytes of stuff," Williams said.

Developers of off-line browsers have incorporated minimal intelligent agents in their products to make them more selective about the pages they cache. For example, Travelling Soft-

links a user will click first and downloads pages in that order.

But that isn't enough intelligence for Paul Ginsparg, a systems administrator at Los Alamos National Laboratories in Los Alamos, N.M.

Ginsparg has configured his Web server to block all requests from Peak NetJet.

"The problem is that [Peak NetJet] instantly requests rapid-fire large numbers of pages that people will never read," Ginsparg said. "With NetJet, one or very few users can tie up a server by generating too many automated requests."

But not all browser accelerators are alike, he said. Browsers that load only a few pages at a time are fine, for example, he said.

One such product is Agent-Soft Ltd.'s LiveAgent.

LiveAgent lets users record their own mouse clicks and keystrokes as they navigate the Web. The recording then becomes an agent that duplicates the users' navigation.

**Mecklermedia Internet Consulting Group estimates that off-line Web browsing products - introduced early last year - will become a \$250 million product category by next year.**

WBI. "It's one of the most productive Internet tools I've come across in a long time," he said.

"You don't waste time looking for things that you don't need," Williams added.

Wasted time, bandwidth and disk space were Williams' chief complaints about off-line browsers, most of which let users cache one page and all the pages within three links of that page.

ware, Inc.'s WebEx lets users configure the product to download only one section of an on-line newspaper.

Accelerators for online browsers use the same approach.

When a user of Peak Technologies, Inc.'s Peak NetJet downloads a page, the product caches all the pages linked to that page.

The product also learns through repeated use which

## Travel systems not always the ticket

CONTINUED FROM PAGE 57

man," Siemborski said.

Busy executives aren't likely to book their own travel via the Internet, said Bob Grant, director of corporate travel at Charles Schwab & Co. Their administrative assistants book the travel and, in most cases, will continue to do so. But in many cases,

those assistants will start to use the Internet, Grant said.

Schwab and Texas Instruments, Inc. are among the first companies to experiment with Internet-based travel services; both use Internet Travel Network, Inc. in Palo Alto, Calif.

TI this month will enter the

final stages of testing its Internet-based travel system and will roll it out to 400 of its frequent travelers. The company hopes to save \$1 million on its \$200 million annual travel and entertainment budget this year and \$11 million in the next five years, said Richard Wooten, manager of travel systems at TI in Dallas.

Schwab's in-house travel agents spend an hour, on average, setting up each business trip. "That sounds like a lot of time, but it's pretty close to the industry standard," Grant said.

Schwab hopes to reduce that transaction time to 15 minutes by using Internet-based automated travel systems. Those systems will be fully deployed to all employees by March.

Other 'net-based travel players include The Sabre Group, a travel agent network and a subsidiary of American Airlines. It is testing an Internet front end to its electronic reservations system. That system requires proprietary Windows-based software.

And Microsoft Corp. and American Express plan to launch an Internet-based travel system by June.

## Time gets server software

CONTINUED FROM PAGE 57

allow content to be changed or added quickly by merging it with prewritten HTML templates.

But the pages are slower to access because they have to be compiled from the database each time the user requests them.

### EFFICIENCY

StoryBuilder attempts to improve performance by compiling popular pages just once and then storing them as static

pages on a hard-disk cache.

Other large sites, including those from *The New York Times* and *Playboy*, rely on multiple servers that run mainstream server software from vendors such as Netscape Communications Corp. and Microsoft Corp. to meet demand.

Cnet, Inc. in San Francisco built StoryBuilder for its news and magazine sites (www.cnet.com). Vignette licensed the product last summer.

StoryBuilder costs \$9,500.

## NEW PRODUCTS

**EVOK PRODUCTIONS** has announced Clip VR, a family of digital image libraries that offers photographic virtual reality images for use with Apple Computer, Inc.'s QuickTime VR and other virtual reality tools.

According to the Long Beach, Calif., vendor, Clip VR provides complete 360-degree panoramic scenes and components that can be layered into scenes for more exciting World Wide Web sites or digital presentations.

A starter CD costs \$89.95.

Evok Productions  
(310) 605-1400  
www.evok.com

**ZOOM TELEPHONICS, INC.** has announced Zoom/Link, a CD-ROM with 425M bytes of software bundled with a fax/modem that features AudioSpan simultaneous voice and data. The product lets users talk while exchanging data with other AudioSpan-compatible modems. It is effective for sharing applications and for interactive games. According to the Boston company, the CD-ROM includes Internet Made Easy and other Internet and online services.

The Zoom/Link CD-ROM costs \$129.

Zoom Telephonics  
(617) 423-1072  
www.zoomtel.com

**PRISM SOLUTIONS, INC.** has announced Prism Warehouse Directory software to let users access and navigate metadata via World Wide Web browsers.

According to the Sunnyvale, Calif., company, a browser can be used to download information stored in the software.

The directory's Web Access module and Personal Mart Toolkit cost \$2,500 for five seats.

Prism Solutions  
(408) 752-1888  
www.prismsolutions.com

**DIGITAL EQUIPMENT CORP.** has announced AltaVista Directory '97, a personnel directory application for Windows NT servers.

According to the Maynard, Mass., vendor, users can access the AltaVista Directory via a Web browser or by other means.

AltaVista Directory '97 costs \$495.

Digital  
(800) 336-7890  
www.digital.com

### But who holds the server?

Companies working on Internet-based schemes to book travel online are playing a game that has become common in business-to-business electronic commerce: Who gets the server?

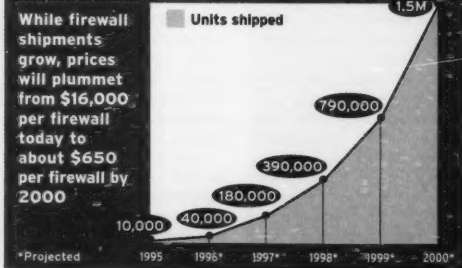
The information is proprietary to the company that does the booking and the travel agency, so each company wants to control the information. To do that, each may want to maintain the server. But maintaining a server requires staff hours, which each company probably would just as soon foist upon the other. The Internet Travel Network (ITN) and The Sabre Group have arrived at similar answers.

ITN keeps a World Wide Web server at its corporate offices and uses dedicated T1 connections — not over the public Internet — to its customers' networks. The Internet has a proxy server that maintains a mirror image of the Web site that runs on the ITN server for end users.

The Sabre Group maintains an electronic commerce server at its corporate offices and a Web server inside the customer company's intranet. The only information that passes between them is the travel information; presentation and transaction information is handled on the customer's intranet. Information is exchanged via a secure T1 line rather than the Internet. — Mitch Wagner

## Snapshots

While firewall shipments grow, prices will plummet from \$16,000 per firewall today to about \$650 per firewall by 2000



Source: International Data Corp., Framingham, Mass.



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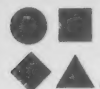
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# Corporate Strategies

Case Studies • Trends • Outsourcing

## Briefs

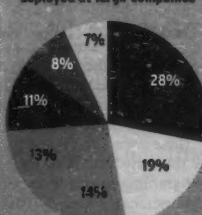
### SDM ready for 2000

SDM International, Inc., a Raleigh, N.C.-based provider of electronic funds transfer and electronic data interchange software, announced that its flagship product, OCM24, is year 2000-compliant. The OCM24 is a retail banking delivery system to manage automated teller machine and point-of-sale networks. The update adds the use of a century indicator to make sure all sorting and other data operations perform properly.

### Andersen-Tallegen pact

Andersen Consulting has signed multiyear information technology services agreements with seven insurance companies. They include five affiliates of Tallegen Holdings, Inc., the property and casualty insurance unit of Xerox Corp. The agreements take effect March 1. Andersen will team with GE Capital Corp. to deliver IT infrastructure services. Andersen also agreed to acquire the assets of Apprise Corp., Tallegen's wholly owned information systems unit and the current supplier of IT services to all seven insurers. Financial terms of the agreements weren't disclosed.

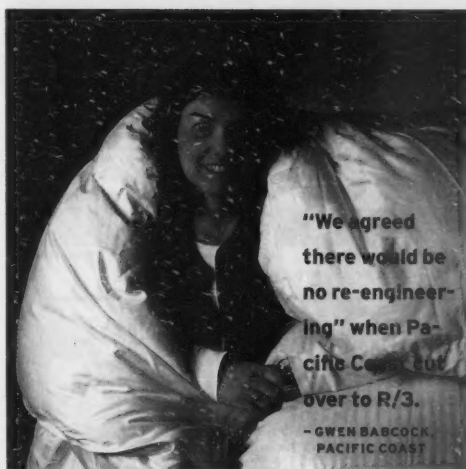
Breakdown of how IS efforts are deployed at large companies



■ Application development  
■ Application maintenance  
■ Data center operations  
■ Systems planning and programming  
■ Data entry and control  
■ Network management  
■ Other

Source: Deloitte & Touche, New York

## R/3 is light as a feather at pillow plant



"We agreed there would be no re-engineering" when Pacific Coast Feather Co. turned over to R/3.

— GWEN BABCOCK, PACIFIC COAST

By Randy Weston

PACIFIC COAST FEATHER CO. is turning to client/server technology to help get grandma's feather bed to grandma in a more timely manner.

The Seattle-based down pillow and comforter manufacturer is one of a growing number of small companies that are investing in SAP AG's R/3 application package, a system traditionally reserved for Fortune 500 companies with deep pockets.

Adam Thier, an analyst at Meta Group, Inc. in Stamford, Conn., said smaller companies such as Pacific Coast can make good use of R/3 if they avoid re-engineering, which in larger companies can cost up to \$5

for every dollar spent on software licensing.

"SAP is complicated, but it is only as complicated as you want to make it," Thier said. "It comes with a real good set of predefined business processes. For smaller companies, which don't have a lot of business processes in place, it makes a lot of sense."

The \$130 million Pacific Coast installed the system in four months for about \$1 million by using only the most vital functions of the R/3 module, taking some calculated risks and forgoing re-engineering, which cut the need for costly consultants.

The result: Pacific Coast manages inventory better and can Feather-light R/3, page 62

### ACQUISITIONS

## Banks buying growth, tech assets

► Technology can be key as banks decide which companies to purchase

By Thomas Hoffman

IF THE YEAR's first banking acquisitions are any indication, expect to see more mergers in which banks leverage their partners' technology strengths to enter new lines of business.

For example, Banc One Corp. last month agreed to pay \$7.3 billion in stock for First USA, Inc. to expand into the fast-growing credit-card business.

Industry experts said Columbus, Ohio-based Banc One stands to gain from First USA's sophisticated data modeling technologies. Those capabilities should help Banc One analyze its customer information more effectively and generate additional cross-selling opportunities.

### INTEREST PIQUED

A spokesman for Banc One said First USA is "very interested" in the Triumph credit-card processing software that Banc One has developed with Andersen Consulting over the past six years. The spokesman, who confirmed Banc One's interest in

First USA's data modeling techniques, said he expected the acquisition to close by May 31.

Profits at Dallas-based First USA have grown at a compounded annual rate of 98%



Oxford's Robert Kay

over the past five years. Still, Banc One is taking some risks in paying more than five times First USA's book value at a time when credit-card loan losses are skyrocketing.

First USA's data modeling techniques aren't unique, but they are leading-edge, said Jim

Beams, a technology analyst at The Tower Group, a financial services and technology consultancy in Newton, Mass.

Other data modeling leaders in the credit-card arena include MBNA Corp. in Newark, Del., and Capital One Financial Corp. in Falls Church, Va., Beams said.

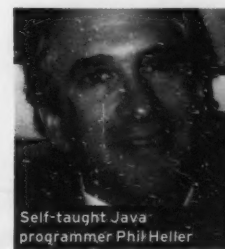
### BANKING ON GROWTH

About three years ago, the bigger banks began to realize that their traditional, slow-growth deposit-and-loan business "maybe wasn't the right business to be in," said Art Gillis, president of Computer Based

The company is about to launch an Internet-based automobile finance and resale system

Solutions, Inc., a banking consultancy in Dallas. "Now we're starting to see some indications of diversification" into growth markets, such as brokerage and credit-card services, he said.

In another big banking acquisition, also announced last Bank acquisitions, page 62



Self-taught Java programmer Phil Heller

## Tough test reveals real Java pros

By Julia King

THINK YOU know Java?

Judging from official certification test results, there's a good chance you don't know it all, according to the vendor that developed the 2-year-old, white-hot object-oriented programming language.

But there's also a good chance you will be hired anyway because many companies desperate for Java talent pay little attention to certification.

Since the official certified Java programmer test was intro-

Java test, page 62



## Nonprofit attempts fund-raising on Web

By Jaikumar Vijayan

IN A HIGH-TECH fund-raising touch, nonprofit Children's Hospital in Boston recently launched a World Wide Web site that reaches out to potential cyberdonors.

The site ([www.childshope.org](http://www.childshope.org)) features patients' personal stories, photos and fund-raising pitches. Donors can send money via a secured electronic transaction, and electronic receipts are given for tax purposes.

"It is an ideal way to attract the younger, technology-oriented crowd," said Elizabeth Hill,

associate director of development at Children's Hospital.

Experts who track the health care industry and nonprofit organizations said hundreds of hospitals and charities have Web pages. But they couldn't say how many use the sites for fund-raising. Hospital Web ([neuro-www.mgh.harvard.edu/hospitalweb.ncl](http://neuro-www.mgh.harvard.edu/hospitalweb.ncl)), a Harvard University Web site, lists 541 U.S. hospitals with Web sites.

According to Hill, the Children's Hospital Web site augments the hospital's existing fund-raising efforts. The hospital, which admits about 16,000



Online contributors to Children's Hospital in Boston send money via a secured electronic transaction

patients per year, relies on annual gifts through direct mail, personal solicitations and planned gifts from bequests and trusts. It raised about \$12 million last year.

The Web site is expected to

add to that total without contributing to the costs associated with fund raising, Hill said.

So far, the response has been less than overwhelming, "but that is what we expected anyway," she said.

## Bank acquisitions

CONTINUED FROM PAGE 61

month, Jacksonville, Fla.-based Barnett Banks, Inc. agreed to purchase Oxford Resources Corp., the largest independent automobile leasing company in the U.S., for roughly \$570 million in stock.

The move is expected to help Barnett, an auto lending leader in Florida, expand its presence throughout the U.S. Oxford, in Melville, N.Y., originated \$1 billion in leases and loans last year for new and used cars through

2,000 dealers in 21 states.

Barnett also stands to gain from Oxford's plans to roll out an Internet-based auto financing network later this month. EVRI.com will house two sites: a virtual used-car superstore and Car Finance.com, where consumers will be able to find information on auto financing and obtain financing online.

Barnett "has a strategic vision to be a national auto finance player, and Oxford can help drive that," said Robert Kay, Oxford's senior vice president of finance who also oversees management information systems.

## Feather-light R/3

CONTINUED FROM PAGE 61

meet the stringent order-to-delivery schedules of mega-retailers such as Sears, Roebuck and Co., JC Penney Co. and Kmart Corp.

"We cut two of our four annual physical inventory counts," said Gwen Babcock, MIS director at Pacific Coast. "We used to have to shut down the plants for three days every quarter. By cutting that in half, we are saving \$60,000 every year."

R/3 wasn't initially on the shopping list. Babcock said she "assumed [R/3] was much too big or we were too small for it." But after seeing a demonstration of the product, Pacific Coast bought the system. Babcock said R/3 met the company's requirements of being written in a fourth-generation language, being a centralized, client/server system and supporting business processes that matched what Pacific Coast was already doing.

Pacific Coast met a four-month implementation goal by focusing on basic functions such as financials and materials management.

"We agreed there would be no re-engineering," Babcock said. "We wanted only the day-to-day operations of the business cut over on the new foundation, then we would learn more about R/3 and its functionality."

After nearly two years using R/3, Pacific Coast is completing the second phase of the project, which involves installing production scheduling and planning modules.

Babcock credited company leaders for acknowledging the risk involved in the project.

"We accepted a certain level of risk in that we couldn't have all of our i's dotted and t's crossed before cutting over," Babcock said. "We couldn't have months of testing. Those of us on the hot seat knew top management were behind us 100% throughout the project."

Even when the installation hit some rocky points, support from above didn't waver, Babcock said. One problem the firm found was that R/3 only weakly supports electronic data interchange (EDI), she said. Pacific Coast relies heavily on EDI for linking with its customers.

"If EDI is not working, the company grinds to a halt," Babcock said. "Ninety percent of our orders are received through EDI, 80% or our invoices are sent EDI, and 60% of our shipments require EDI advanced ship notices, which must be on our customers' computers before they will accept an order."

Soon after turning on the system in April 1995, Pacific Coast's R/3 shortfalls caused blips in cash flow, a lag in invoices and a customer to reject six truckloads of goods because the order arrived before the shipping notice.

To solve the problem, Pacific Coast's information systems staff programmers within 60 days developed EDI interfaces for PC clients accessing R/3 applications, Babcock said.

## Java test

CONTINUED FROM PAGE 61

duced in October, between 55% and 60% of the 100 or so programmers who have taken it have failed, according to officials at Sun Microsystems, Inc. in Mountain View, Calif.

"Everyone's passing themselves off as a Java expert right now. They just read a book and think they know it," said Laurel Sacks, worldwide programs manager at Sun Educational Services.

But after taking the test, "they find out there's a lot more," Sacks said. The test isn't an "easy thing to get through," she said.

Composed of 70 multiple-choice and short-answer questions, the programmer certification test takes between 90 and 135 minutes to complete. Programmers take the test on an appointment basis at an office of Sylvan Prometric, an independent testing services company in Baltimore. Sylvan administers the tests on behalf of Sun.

**"I'm not surprised by the low pass rate. It's a tough test."**  
— Phil Heller,  
Java programmer

Phil Heller, a self-taught, independent Java programmer and educator, passed the Java certification test three months ago. He had worked for several years developing systems in Motif and C++.

"I'm not surprised by the low pass rate. It's a tough test," even for someone with his extensive programming experience, Heller said.

For example, "a question will ask, 'Which of the following is legal in Java?' and then give four or five similar statements to choose from," he said.

"There are no trick questions, but you have had to do some programming in Java to answer the questions correctly," Heller said.

Still, several recruiters and employers said they never ask whether a person who calls himself a Java programmer is certified.

"Certification hasn't been an issue because there have been so few Java programmers out there," said Rosalia Bacarella, president of Interactive Corporate Communications, Inc., an Internet applications development firm in White Plains, N.Y.

## S H O R T S

### Year 2000 help for VAX

Comtex Information Systems, Inc. in New York entered into a partnership with Accel8 Technology Corp. in Denver to help Digital Equipment Corp. VAX customers make their systems year 2000-compliant. The two companies will employ Accel8's Navig8-2000 impact analysis tool set and Comtex's Delta 2000 methodology to provide year 2000 date change conversions for clients with legacy systems.

### Customer research system

DMR Trecom, Inc., a subsidiary of Amdahl, Inc., announced a data warehousing framework for communications industry companies to help them target customer acquisition and retention data. DataWork can work with any popular relational database. It is available now from the Edison, N.J.-based company.

### Hopper enshrined

Infomart, a technology center in Dallas, this week will add a local hero to its Information Processing Hall of Fame. The 1996 honoree is Max Hopper, former chief information officer of American Airlines and inventor of the Sabre online reservation system.

## Managing

### Swaying - gently

You know you have the better technology plan, but you're in the minority. How can you best make your case? Page 70.

Some say Internet-based training is a growing industry. Yet few companies have turned browsers into teachers.

Is it time to take it seriously?

# 'NET TRAIN, NET GAIN?

By Alan S. Horowitz

**F**ive years from now, will IBT stand for "Internet-based training" or "incredibly bad trash"?

Though it's been talked about for years at training conferences, Internet-based training is still largely a promise. Despite the hype, hands-on experience with this instructional medium remains more virtual than real. Many information systems managers have yet to employ it because it's so new.

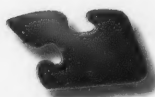
Internet training, page 66

Jim Huckestein  
of Chevron

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# 'NET TRAIN, NET GAIN?

CONTINUED FROM PAGE 63

"Many people are looking, but I'm not sure that many are participating," says Tom Campbell, a training manager at John Hancock Mutual Life Insurance Co.'s education center in Boston.

But many plan to participate soon, says Brandon Hall, editor and publisher of the "Multimedia Training Newsletter." He says a survey of Fortune 1,000 companies found that multimedia-based training (which is computer-based training using two or more media, such as audio and text) accounts for 16% of corporate training and is expected to reach 35% in two years. Significantly, 86% of those surveyed expect to distribute their multimedia-based training using intranets.

Ellen Julian, a research manager at International Data Corp. in Framingham, Mass., says World Wide Web-based training for the information technology market could exceed \$1 billion by 2000, up from less than \$100 million currently.

## IBT VS. CBT

Internet-based training (IBT) shares attributes with its cousin, computer-based training (CBT). Both involve self-directed, self-paced instruction and nonlinear learning; students can review the material largely in any order they want. Both are technology-based and more convenient than classroom training.

## MAKING IBT WORK FOR YOU

*IBT isn't suited for all situations and students. Here are ways to make it more effective for your organization:*

- **Ford's Phillip Barnhard recommends breaking down IBT into bite-size pieces** because people won't sit at their desktops working at a course for hours, as they would in a classroom. He took a four-hour course and broke it into five segments, each of which was broken down further into five to 10 subsegments of two to eight minutes each.
- **Jim Huckestein at Chevron recommends using IBT to prepare students for a classroom course.** By having them study material online prior to a class, they can all begin the classroom instruction with similar knowledge levels.
- **Tom Campbell at John Hancock likes the idea of having IBT designed around small, self-contained instructional modules.** A manager about to meet with a difficult employee, for example, could practice the skills needed to handle the meeting by reviewing an online module that addresses that topic.

Still, there are differences. Hall defines any online training as instruction done while a computer is connected to a remote server, whether it's a company's intranet or the Internet. That provides for interactivity unavailable with CBT. Students can send electronic mail, fax or telephone in questions to an instructor and receive responses. The instructor can hold regularly scheduled "office hours" so students can receive immediate feedback. And online chat sessions and E-mail can be used to generate interaction among students.

"[IBT] has the advantages of CBT in that the students can take it at the desktop and combine it with the instructor. That's the best of both worlds," says Kay Miner, director of IS training at Georgetown University Medical Center in Washington.

IBT also provides administrative advantages. Phillip Barnhard, instructional designer in education training and development at Ford Motor Co. in Dearborn, Mich., says a well-designed IBT curriculum allows the company to track students' progress, determines if students are getting lost in the material and how fast they're moving and ensures students aren't bypassing topics. When the material creates a bottleneck for students, the administrator can identify the problem and correct it. CBT has limitations in that area because it generally lacks the centralized control one can have with IBT.

And IBT is matchless in its ability to provide updated information to many users in widely dispersed locations. Chevron Information Technology Co., the IT arm of Chevron Corp., in San Ramon, Calif., has used IBT for some training needs for a year and a half. Jim Huckestein, the company's manager of education services, says it's "very exciting."

"You update one copy, and it's quickly disseminated to the masses. It's a very efficient and effective way of communicating to a large group of people," he says. "It's reducing the window of time between when we deliver a product and when somebody can sign up for it."

But online training isn't perfect. "There are techies who don't care about having an instructor," says Susan J. Goldberg, president of Northeast Training

Group, Inc., a provider of online training in Newton, Mass. "[But] the people-person part of instruction will continue to be needed for some," Hall says. "People love the security of having a live, warm human being there."

Although costs can be lower than classroom training, that may not be the case for very small groups. "If you only have 10 people, there's no need to have online anything," says Jeff Morgan, president of Rad Media, Inc. in Palo Alto, Calif.

Julian says the costs of developing an



**Chevron's Jim Huckestein**

**found that an online Windows 95 training course for 8,500 people cost \$1.80 per person. "The more people," he says, "the lower that cost. It's astounding ..."**

online course can be quite high and difficult to control. So, it's worth looking at vendors who may be able to provide courseware for less than you would spend to develop it in-house, she says.

There's also the issue of bandwidth. Courseware must be designed with bandwidth limits in mind, or students may spend more time waiting than working.

Technical information, such as programming, is a natural for IBT.

McDonald's Corp., for example, uses CBT for technical training and plans to roll out online training early this year. "Part of the reason we've been successful is we've focused on technical skills, things [in which] there is a black-and-white, yes-or-no kind of answer," says Beth Buske, learning manager at the company's IS department in Oak Brook, Ill. But, she warns, "If you're trying to do training for soft skills, how to communicate better with your employees or how to be a good coach, I think [CBT] makes it too easy for the people not to learn the information because they don't have to practice it live."

CBT also has been a financial help, Buske says. She says McDonald's cut its training costs more than 18% when it shifted to CBT. And once the company's intranet infrastructure is established, Buske says "the savings will be even greater because we can make [the training] available to more people."

Finally, not everyone has the motivation to learn without an instructor. It's easy to be passive in a classroom situation but impossible online. "You have to be proactive," Buske says. As a result, there are more dropouts with online training than in traditional seminars.

Everyone is interested in

comparing IBT costs with those of other instructional media, but there seem to be few cost/benefit analyses so far. That's because the medium is so new, and those who have experience with it haven't generated hard numbers. But early indications are promising.

Huckestein found, for example, that an online training course for Windows 95 costs \$1.80 per person after he distributed the course to 8,500 people. "The more people, the lower that cost. It's astounding, the cost savings," he says.

Mary Kay Murlas, president of Cincinnati-based Information Technology Development Corp., which offers classroom and online training, says her online classes cost about 20% to 25% less than traditional classroom courses. Nancy Lewis, general manager of worldwide education and certification at Microsoft Corp., says costs for online training can be half that of classroom training because the instructor can teach from anywhere, and there isn't a building full of computer hardware.

## OTHER BENEFITS

There also may be other savings. With IBT, the IS department can be sure everyone is using the same material. That's virtually impossible to do with CBT or even classroom training because it's difficult to be sure users and instructors have received the latest material, and it's impossible to confirm they're using it. It's easier to update training materials over the Internet. That's particularly significant for IS departments, which face a continuing battle to keep material fresh. "Whatever is the latest and greatest suite or software, [IS] wants it for the employees," says Fred Seibel, manager of interactive learning technology at BBN Corp., an Internet services vendor in Cambridge, Mass. No medium can beat IBT in getting the latest training material out to the greatest number of employees quickly and relatively inexpensively.

Hall looked at eight companies that converted to CBT in a study funded by Macromedia, Inc. in San Francisco and found that the time required for training dropped dramatically. "You can pretty well count on an average 50% reduction in the amount of training time required when they're at the computer vs. a workshop," Hall says. IBT will likely provide comparable benefits.

TRW, Inc. found that projects once worked on by a team, based at one location, are being worked on by teams on both coasts via the Internet, Miner says. Miner recently left TRW for Georgetown.

Internet-based training has the potential to be less expensive and superior to traditional computer-based training.

With the right courses and students — and adequate bandwidth — IBT can be successful. But when human trainers are needed, it's likely to be no more useful than traditional CBT.

*Horowitz is a freelance writer in Salt Lake City.*

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LEILANI ALLEN

## WORK AND LOVE CAN BECOME A VOLATILE MIXTURE



very study indicates that we're spending more and more time at the workplace, so it isn't surprising that we're often finding romantic partners there.

Information technology, with its project model of work, throws people together for long periods of time, often after business hours and on weekends. Inevitably, some professional relationships turn personal. Should we care?

Mark was a manager, and Janice was a senior software engineer in the systems development unit. They shared many interests, notably the company softball league. They frequently spent their lunch hours discussing the league and other matters. At the time, Mark was up for a promotion that would have resulted in Janice and three others being his subordinates. One of the other three complained to the chief information officer, stating it was common knowledge Mark and Janice were having an affair. The CIO spoke to Mark, asking if he could judge Janice's performance objectively. Mark said he could, that he had also heard the rumors and that they were false.

The CIO, receiving the same responses from Janice, considered the matter closed.

Sarah and Bill were project leaders who reported to a common manager. It wasn't a secret that they were romantically involved. When the pair began having problems, the tension spilled into the workplace. Staff in both units, who had previously worked well together, started

to avoid proposing common projects. Everyone was tiptoeing around the issue, reluctant to intrude.

Sarah and Bill's manager called the two together and asked them what was going on. Sarah responded angrily, saying the manager had no right to pry into their personal affairs and that she was considering filing a grievance with personnel. Bill conceded they had been having problems but also said it was a private matter and that the manager should drop it. The manager did.

Angela was a senior analyst in IT. She was assigned as the liaison to the sales department. IT's technical support group was asked to determine the appropriate platform for the new sales system, but Angela rejected the group's recommendations and went with another choice. User management supported her, causing considerable tension between the two departments. Shortly thereafter, Angela was promoted to manager. The rumor mill went into full gear, alleging an affair between Angela and the vice president of sales. The IT director, when he heard the rumors, chastised an individual from technical support for spreading the rumors.

**Judgment Call:** In the old days, it was standard practice for companies to discourage employee romances, usually re-

quiring reassignment or sometimes termination. In my own career, I know of a couple who concealed their marriage because of such rules. Today, legislation and attitudes have changed, but most managers still consider office romances a problem. Human nature being what it is, coworkers become almost fanatical in looking for examples of favoritism in such relationships. It can severely affect morale and even ruin an individual's reputation.

When does an office romance become an issue for management intervention? Three issues are relevant:

**1.** Are there displays of affection or emotional outbursts that are inappropriate in a business environment? If so, there should be immediate intervention.

**2.** Does the relationship affect the group's performance, creating unnecessary friction, errors or blame-laying? The IS director should focus on solving the problem, not on exploring the presumed source of the problem. The IS director shouldn't even ask whether a relationship exists, because that's a violation of privacy.

**3.** Does the individual's performance review appear to reflect a bias? Again, the bias can be positive or negative and still be against established policy.

One can't simply presume there will be a problem. Focus on the behavior, not the motivation for it.

*Allen's column deals with the kinds of people issues managers face every day but are reluctant to discuss openly. Each column is based on real-life situations. The names and certain circumstances are changed to protect confidentiality. Allen, a director at Tenex, a management consulting firm in Burlington, Mass., invites readers to share experiences with her via E-mail at [allen@tenex.com](mailto:allen@tenex.com).*

## RESOURCES: POWER TOOLS

### Project Scheduler 7 for Windows 95 and Windows NT

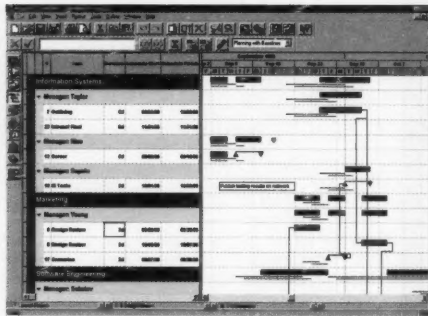
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By Jeffrey Gordon Angus

**T**HE MORE THINGS a product tries to be good at, the less good it can be at any of them. But Project Scheduler 7 for Windows 95 and NT, the newest version of Scitor's project-scheduling tool, defies that. It aims to be a sophisticated project management and scheduling tool for a range of audiences, and it's remarkably solid for all of them.

Scitor recognizes that in big organizations, a team of people manages a project, yet members need the flexibility to create their own optimal tool set.

You can customize tool bars, field names, filters and the ways that the program displays different events. Project Scheduler 7 has even adapted to the 1990s penchant for compulsive staff changes, making it fairly easy to switch an assigned person midway through a task or



**Scitor Project Scheduler 7's flexibility is its greatest general strength. You can customize tool bars, field names, filters and modes for displaying different events.**

to change cost rates in midstream.

Most important, the product has the flexibility to maintain multiple baseline schedules with their related costs and resource use.

To get the full benefit, implementation should be

managed by the information systems department or a computer-sophisticated manager. Project Scheduler 7 is more effective if it's implemented site-wide with a structured plan.

Documentation and online help are good. The printed tutorial is a useful start if the student already understands project management principles. Project Scheduler 7 has wizards and other helpers to keep your work flowing, but it doesn't have some of the swell tricks in Microsoft Corp.'s Project, such as the way it detects a repetitive task and prompts you with a suggestion of how to save time.

Project Scheduler 7 is an excellent choice for networked project managers of various experience levels.

As a stand-alone product, it's best for experienced users who can take advantage of its advanced functions and customization features. Beginners working without a mentor can do simpler schedules more easily with Microsoft Project and more complex schedules more easily with Time Line Solutions Corp.'s Time Line.

Angus is project director at The Data Works Ltd. in Seattle.



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# FRIENDLY P E R S U A S I O N

► *It takes more than technology to persuade the majority that you're right and they're wrong*

By Kathleen Melymuka

**A**T A LARGE INSURANCE COMPANY, a debate was raging in information systems over which vendor to tap for a new imaging system. The majority wanted Sigma Designs Imaging Systems, Inc. in Fremont, Calif. The director of systems development favored FileNet Corp. in Costa Mesa, Calif.

"Sigma had some nifty features that were enthralling some folks," he recalls. "Our position was that, since vendors leapfrog each other in features every six months, it was more important to get somebody who would be long-term viable."

The director used a combination of persuasion techniques to win his case. He had laid the groundwork by enlisting some influential users early. When he had built a prototype to persuade them to financially support the concept of imaging, it was built with FileNet.

Then, rather than denigrate his opponents' position, he focused on proving the strength of his.

He went to FileNet for support and found a beta version that had all the Sigma features. "So we built a prototype with software not on the market yet," effectively co-opting Sigma's strengths and neutralizing the opposition, he says. "Then we could say, 'What do you mean it doesn't work? There it is. And it's linked into our own system.'"

In building the prototype, the IS director used as much psychology as technology. He designed it specifically to answer every point the opposition raised.

"When you're trying to drum up support," he explains, "you'd better know your audience and customize the show to them."

The success of an information technology project depends on buy-in by the people you work with. But because persuasion skills haven't been a priority in technology circles, many a good idea never sees the light of day.

"The ability to persuade others is crucial," says Joan Nyman, president of Joan Nyman Associates, a business consulting and training company in Andover, Mass., that specializes in communications and customer service. "You can be technically brilliant and still be at a disadvantage if you can't persuade others to buy in."

From the IS trenches, here's a quick persuasion primer:

• **Consider the landscape.** "Understand where your business is headed," says Doug Whittle, performance development manager at Pioneer Hi-Bred International, Inc. in Des Moines, Iowa. "If there's a real push to cut expenses and you act like you've never heard about that, you're going to look pretty dumb."

"Consider how the technology fits in to the existing skills base," says Tim Vogel, systems development manager at KFC, Inc. in Louisville, Ky. "If you're saying you need to move into object-oriented development and you have a Cobol shop, the cost of that implementation is huge."

• **Involve decision-makers early.** "Get them to buy in to your approach to begin with," Vogel says. "Before we did research to figure out what our new platform would be, we talked with the real decision-makers about our approach, and we included their suggestions in our evaluation process. So when we came to them with the results, they had high confidence that it was done properly, and they didn't question our evaluation methods."

• **Know where your opponents are coming from.** "If you're proposing to implement an application that's going to eliminate data-entry positions and you're trying to persuade the manager of that function, it's going to be tough because he won't be a manager if there's no one to manage," Vogel says.

• **Stay cool.** "There's a lot of potential for getting into a religious war because people become too emotional," says Jerry Filler, director of technical services at Progressive Casualty Insurance in Mayfield Village, Ohio. "You've got to avoid that."

• **Accentuate the positive.**

"Tell why your idea is best for them, not why theirs is worst for you," Nyman says. "An IS manager says, 'My department can't do option A. It will overwork my people.' He could be more effective saying, 'If we try option B, we'll have much better results....'"

• **Be objective.** List strengths and weaknesses from a technical standpoint and for the particular application you're developing, Vogel says.

• **Tell the whole truth.**

"Don't try to hide the obvious," Whittle says. "Some people think if they just don't mention it, no one will catch it."

• **Get testimonials.** "If you can find colleagues and organizations that have succeeded in doing something similar, find out what benefits they realized and let management know," Whittle says.

• **Show them.** A prototype is worth a thousand words.

• **Build a track record.**

"Underestimate the benefits and overestimate the cost," Whittle says. "Otherwise, even if you get this one approved, your credibility will be shattered next time around."

Melymuka is a freelance writer in Duxbury, Mass.





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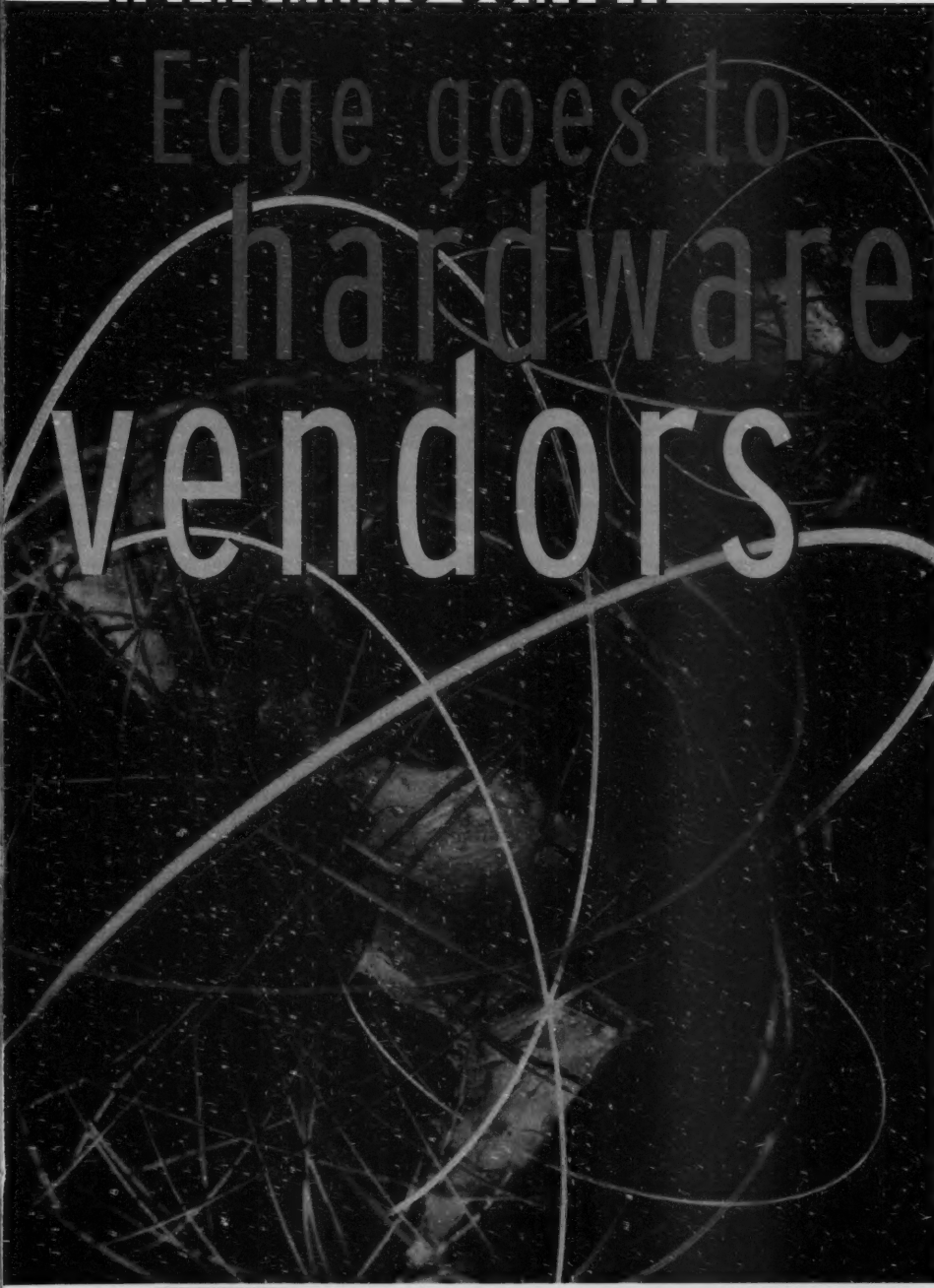
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## Buyer's Guide

**CUSTOMER SATISFACTION QUARTERLY: More than 1,600 networking managers rate their vendors in an exclusive Computerworld survey**

### NETWORKING SURVEY:



Edge goes to  
hardware  
vendors

By Kevin Burden

CHANCES ARE, YOU worked with a lot of vendors to piece together your network — one vendor for the internetworking equipment, another for electronic mail and another for services. The good news is you're likely to have decent relationships with networking hardware vendors. The bad news is networks aren't built on hardware alone.

In an ambitious customer satisfaction survey, *Computerworld* set out to measure user satisfaction with networking vendors. We found that users are more satisfied with hardware vendors than software and services vendors.

We surveyed 1,669 user sites to see what users thought of their vendors in areas that included product quality, service and support and cost of ownership. Because the results show satisfaction with vendors and not specific products, they're intended to provide potential buyers

Hardware vendors that sell network interface cards and WAN equipment scored the highest satisfaction in the survey

Networking survey, page 74



## RATINGS SCALE

- 1= Not at all satisfied  
 2= Not very satisfied  
 3= Somewhat satisfied  
 4= Very satisfied  
 5= Completely satisfied

## Network operating systems

## Overall satisfaction

Novell	3.80
Unix	3.76
Microsoft	3.73
IBM	3.71
Industry mean	3.77

## Software quality

Unix	3.95
Novell	3.93
IBM	3.80
Microsoft	3.78
Industry mean	3.66

## Electronic mail

## Overall satisfaction

Novell	3.79
Microsoft	3.64
Lotus	3.54
Industry mean	3.63

## Software quality

Novell	3.88
Lotus	3.66
Microsoft	3.65
Industry mean	3.68

# NETWORKING SURVEY: Edge goes to hardware vendors

CONTINUED FROM PAGE 73

with a look at some of the strengths and weaknesses of various vendors. These results can be one of many vehicles used to evaluate the vendor field.

The survey revealed the following:

■Hardware vendors that sell network interface cards and wide-area networking equipment scored highest in the survey. Network operating system vendors scored highest among software vendors.

■Although Lotus Development Corp. commands much of the E-mail market with Notes and CC:Mail, users of Novell, Inc.'s GroupWise proved to be the more satisfied bunch. From service and support to the caliber of the software, Novell users consistently ranked their satisfaction highest.

■AT&T Corp. was the only company to emerge as an outright winner, with a statistically valid advantage, in any product category — WAN transmission.

In addition to overall satisfaction, the survey uncovered specific vendor strengths. For example, Digital Equipment Corp. posted mediocre overall scores in markets such as E-mail, WAN equipment and network operating systems. But Digital consistently scored among the best for its customer support.

Hewlett-Packard Co.'s strength appears to be its integrity. HP scored extremely high grades for WAN equipment, a market in which it has very little manufacturing presence. But HP does have an aggressive systems integration business, so although the products aren't HP-made, they're HP-backed and supported.

## METHODOLOGY

The survey was mailed to 4,000 corporations and organizations randomly selected from *Computerworld's* buyers' database. A total of 1,669 completed surveys were received by the cutoff date in early January.

Respondents named their primary and, if applicable, their secondary vendors in each of eight networking areas. That often resulted in a response count higher than the total overall responses.

*Computerworld* declared a vendor the winner in a category only if that vendor emerged with a statistically valid advantage over its competitors and if the users evaluating it exceeded 100 responses or 5% of the total responses in that category. In addition, the response base for that category should be reasonably representative of the user population as measured by major market research firms.

## NETWORK OPERATING SYSTEMS

Analysts and users agree there are essentially two network operating systems from which to choose if you're concerned about standards: Microsoft Corp.'s Windows NT and Novell's NetWare. But while NT continues to gain momentum, NetWare's market share appears to have peaked. A recent survey by Business Research Group in Newton, Mass., showed NT posting a 13% increase in the number of users who say they will use NT this year vs. a 2% decline for NetWare.

Despite NT's increasing popularity, *Computerworld's* survey showed that NT's relative immaturity left it trailing NetWare and Unix in nearly every satisfaction category — but not by much (see

chart at left). Considering that NT still lacks an enterprise directory, doesn't scale well, and users and vendors alike remain low on its learning curve, "not by much" may be encouraging, says David Passmore, president of Decisys, Inc., a network consulting firm in Sterling, Va.

NT also continues to attract loyal NetWare users, such as Patricia Stadel, information systems director at Eaton Vance Management in Boston, simply because it's from Microsoft and Eaton Vance is a Windows shop. Stadel says she was actually happier with NetWare's quality, but says she is confident in NT's direction and likes the fact that NT allows her to use the same platform for both print and file services.

NT proved to be more budget-friendly than NetWare. Cost of ownership was the only category in which NT posted a higher rating than NetWare and Unix. NetWare has never been considered inexpensive, but its users get an enterprise directory service for their troubles — something for which NT users are still waiting.

Still, several users, such as David Olson, IS director at CCL Label in Sioux Falls, S.D., complained about the cost of upgrading to NetWare 4.1. "Each piece of software you need is significant, and they add up in hurry," says Olson, who estimates his upgrade cost at \$12,000 per server.

NT is less expensive, according to users of both operating systems, but again, it's a maturity issue. There are fewer utilities available for managing NT systems and, therefore, fewer to buy, which isn't necessarily a favorable trade-off, Passmore says.

IBM OS/2 Warp Server users were even more satisfied than NT users with their cost of ownership. But Passmore attributes that to the self-selection of the customers who install it. "Warp tends to be installed in IBM shops, traditionally run in a top-down, centralized fashion that tends to result in relatively low cost of ownership," he says.

Besides cost, IBM also outscored Novell and Microsoft in service and support and squeaked by NT for better software quality. But in the three other categories, Warp Server scored on the same level — if not worse — than NT.

Unix tied with Novell in overall satisfaction. That surprised Passmore, "since when you're using Unix, you're typically on your own and have to provide a higher level of your own technical support," he says.

Unix has its advantages, such as eliminating the need for separate platforms for print and file services. But its emerging advantage, according to Passmore, comes from the central role Unix plays in intranets. "People's [network operating system] needs are shifting to becoming intranet needs. And because Unix is commonly chosen for scalable Web servers, Unix users will have a leg up and may continue to be very satisfied with Unix," Passmore says.

## E-MAIL

When *Computerworld* last conducted an E-mail customer satisfaction survey more than a year ago, Novell's GroupWise was second to Lotus' CC:Mail in overall satisfaction. This year, GroupWise took the top spot and Lotus fell to third (see chart at left).

Although we don't know if the Lotus users were

using CC:Mail or Notes, which was included for the first time in this year's survey. Notes couldn't garner the type of ratings to help Lotus beat Novell.

One of the dynamics that contributed to Lotus' poor showing is that CC:Mail users are realizing they soon will have to move to something else or risk being stranded on an unsupported messaging system. But users who were interviewed say they believe Lotus is on the right track, especially with Domino, Lotus' new Notes server.

"We're feeling better and better about our decision to move to Notes now that Domino promises full Notes functionality through Web browsers," says Art Johnston, IS manager at Materials Research Corp. in Orangeburg, N.Y.

Novell's grades were strong in all categories this year, even though the majority of users still use GroupWise 4.1. "This shows what a strong offering GroupWise 4.1 was. Novell packed a lot of functionality into this old product," says Gary Rowe, a principal at Rapport Communications Inc., a consultancy in Atlanta.

Novell's best grades came in comfort with vendor and software quality, perhaps because of GroupWise's maturity.

Microsoft's Exchange may be the "easy, comfortable choice for many since it nicely integrates with everything else from Microsoft," Rowe says. But Microsoft's overall satisfaction ratings as an E-mail vendor aren't that much better than Lotus'.

Microsoft scored its best grade in comfort with vendor. But software quality and service and support were exposed as weaknesses. "Thankfully, we have a membership in the developers' network. This way we get bug fixes and service packs on a regular basis," says Richard Blair, IS manager at CT Services, Inc. in Southfield, Mich.

#### WAN EQUIPMENT

The WAN equipment market is divided among traditional network vendors, such as 3Com Corp. and Cabletron Systems, Inc., and systems vendors such as Hewlett-Packard (see chart at right).

But despite HP's relatively few responses and low market share in this area, it was on track to win the overall satisfaction category by a sizable gap. "HP doesn't manufacture too many of their own [WAN] products. It does, however, have a thriving systems integration business that will install anything you want," says Eric Hindin, a program analyst at The Yankee Group in Boston. Maybe choosing best-of-breed products backed by a reputable vendor with an excellent service history is the way to go, Hindin says.

Among network-only vendors, none satisfies its customers better than 3Com, according to these results. A similar *Computerworld* survey reported last September supported these findings.

For overall satisfaction, 3Com inched to the top spot past router mogul Cisco Systems, Inc. But the scores were so tight, it's unfair to say one is better at satisfying its customers than the other. In 15 subcategories that include everything from equipment and service quality to cost of ownership and comfort with the vendor, 3Com scored highest in nine.

3Com's strongest assets are the quality of its equipment and the value it delivers for the dollar. In equipment categories such as performance, reliability and feature set, 3Com won by slim mar-

gins. "3Com manufactures quality products. But because they're typically plug-and-play and less configurable than those from Cisco and Cabletron, they're relatively easy to install and less problematic. Users like that," Hindin says.

On price and value, 3Com wins by much greater margins. "Price played heavily into our final decision," says Nicholas Felice, IS director at Sullivan & Worcester LLP in Boston. "Through our reseller, [3Com] was cheaper than the competition."

Cisco was nearly even with 3Com in most equipment-quality categories, but not even close on price and value. "Cisco charges top dollar for the quality they deliver," says Brian Toburen, a technical service officer at Salin Bank and Trust Co. in Indianapolis.

So why go with the more expensive of the two? "We know Cisco to be a reputable vendor with an excellent track record of building exceptional products," Toburen says. Cisco's reputation plays a big part in making up the minds of users who want to sign on with a trustworthy vendor. Cisco pulled out its only two wins in the reputation and credibility categories.

Bay Networks, Inc. scored solid grades throughout. It had no stellar strengths to brag about, nor any glaring weaknesses. Bay scored the strongest grades for performance and reliability of its products and for its flexibility as a vendor.

Cabletron is like Bay in many ways, according to Hindin. Both target large, harder-to-please, sophisticated user companies. Both were fairly equal in overall satisfaction and showed some of the same strengths, such as equipment quality.

But Cabletron scored slightly better than Bay in the support categories.

Digital users were stingy with good grades in most areas but not in equipment quality and vendor service. Digital consistently won support categories in many of the different network segments.

IBM didn't score well at all. Users graded their satisfaction last in nearly every category.

#### WAN TRANSMISSION SERVICES

AT&T was the one vendor in this survey that statistically distanced itself far enough ahead of its competitors for *Computerworld* to call it a winner.

AT&T not only scored highest in overall satisfaction, but it also earned the top scores in 18 out of 19 categories in the WAN transmission part of the survey. It scored its highest grade for comfort with vendor, which Hindin says is often the deciding factor for potential customers (see chart on page 76).

There was no measurable difference in the quality ratings of the three major carriers, so satisfying customers comes down to tangibles, such as price, and a few intangibles, such as support, vendor credibility and reputation.

"There's something to the AT&T name that just breeds comfort in its customers," Hindin says. He says customer comfort with AT&T may be high enough for it to run advertisements that "foster an image that its quality is better, therefore its prices are higher."

In the one category where AT&T didn't come in first — vendor flexibility, or willingness to negotiate — users gave MCI Communications Corp. an edge. MCI and Sprint Corp. users have nearly identical views of their carriers. Overall satisfac-

Networking survey, page 76

#### WAN equipment

##### Overall satisfaction

3Com	3.96
Cisco	3.91
Bay Networks	3.89
Cabletron	3.78
Industry mean	3.84

##### Cost of ownership

3Com	3.78
Bay Networks	3.64
Cisco	3.49
Cabletron	3.44
Industry mean	3.62

##### Comfort with vendor

3Com	4.12
Cisco	4.07
Bay Networks	3.95
Cabletron	3.86
Industry mean	3.93

#### Secondary WAN equipment vendors

##### Overall satisfaction

Hewlett-Packard	4.20
Digital	3.77
IBM	3.56



AT&T is the one vendor in the survey that statistically distanced itself from its competitors.

## WAN transmission services

## Overall satisfaction

AT&T	3.93
Sprint	3.68
MCI	3.68
Industry mean	3.69

## Comfort with vendor

AT&T	4.05
MCI	3.89
Sprint	3.77
Industry mean	3.77

## Service and support

AT&T	3.79
MCI	3.58
Sprint	3.44
Industry mean	3.56

## Network interface cards

## Overall satisfaction

3Com	4.26
Hewlett-Packard	4.22
Intel	4.08
Standard Microsystems	3.95
IBM	3.86
Industry mean	4.08

# NETWORKING SURVEY: Edge goes to hardware vendors

CONTINUED FROM PAGE 75

tion was dead even. Network quality and credibility also were a wash.

But MCI scored a clear win in service and support. From its problem solving and responsiveness to the quality of its advice and support staff, MCI scored decisive marks over Sprint. That win gives MCI a real advantage over Sprint "since the speed at which problems are resolved goes far in making people feel one carrier is better than another," Hindin says.

MCI also scored better than Sprint on price, but not quite as well as AT&T. At this service level, all costs are based on custom-negotiated tariffs, Hindin says, and AT&T and MCI look to be slightly more aggressive there.

## NETWORK INTERFACE CARDS

When choosing products that have essentially reached commodity status, vendor reputations are often the best criteria to scrutinize, according to users. Such is the market for network interface cards (see chart at left). Vendors often use price and speed improvements to make most of their noise, but users say their decisions are more likely to be based on the vendor with whom they feel most comfortable. "I just trust 3Com to make good products," says Dennis Arnold, a network manager at The Ohmart Corp. in Cincinnati.

Buying based on comfort level may be about as unscientific as you can get, but because overall satisfaction grades for all vendors are so high, reputation is as good a deal maker as anything else. Overall satisfaction scores for individual vendors averaged out to 4.08, the highest of the survey.

But if you're interested in the best, it's a toss-up between 3Com and HP. The two companies traded the first- and second-place spots in every category, never leaving more than a few tenths of a point between them.

There was a larger gap between second place and Intel Corp., which consistently scored third. But satisfaction with these cards is so high, third-place grades are in the "very satisfied" range.

## NETWORK MANAGEMENT

Users are reasonably happy with the crop of network management packages being supplied by vendors. For everything from enterprise-class to LAN-specific suites, half of the 1,217 users who filled out this section of the survey indicated they were "very satisfied" with the overall performance

(see chart below). Satisfaction with software quality and the comfort users feel with their vendors received the best marks.

Nearly 70% of users indicated they were either "very" or "completely" satisfied in both those categories. Cost of ownership and service and support received the most critical grades but still managed to be largely positive.

## SECURITY SOFTWARE

Only 30 of the 620 responding users of network security software said they weren't satisfied with their vendor. Large companies with 500 or more employees were just as satisfied, if not more so, than smaller companies.

But a greater percentage of the large companies said they were "completely satisfied" with the quality of their network security software, their relationship with their vendor, the cost of ownership and the vendor's service.

## INTERNET ACCESS SERVICES

Not everyone said they were happy with their Internet service providers. Surprised?

Granted, many of the user companies that responded to this section weren't heavy 'net users.

Many of the respondents had relatively few people on the Internet and were dealing with small local or regional providers.

This section not only uncovered the fewest satisfied users, it also had the most actually saying they were unsatisfied with their service provider — meaning relatively few users were in the middle with "somewhat satisfied" grades.

They're less satisfied with the providers' problem solving, advice and expertise and their responsiveness.

Burden is Computerworld's senior researcher, Scorecard/Firing Line.



Network interface-card users say their decisions are likely to be based on the vendor with whom they're most comfortable.

## Network management software

## Overall satisfaction

Not at all satisfied	0%
Not very satisfied	4%
Somewhat satisfied	33%
Very satisfied	50%
Completely satisfied	12%

Percentage of respondents (Base: 1,217)

## Network security software

## Overall satisfaction

Not at all satisfied	0%
Not very satisfied	5%
Somewhat satisfied	20%
Very satisfied	52%
Completely satisfied	15%

Percentage of respondents (Base: 620)

## Internet access services

## Overall satisfaction

Not at all satisfied	1%
Not very satisfied	8%
Somewhat satisfied	37%
Very satisfied	43%
Completely satisfied	11%

Percentage of respondents (Base: 1,301)



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  20. Finance/Insurance/Real Estate
  30. Medical/Law/Education
  40. Wholesale/Retail/Trade
  50. Business Service (except DP)
  60. Government - State/Federal/Local
  65. Communications Systems/Public Utilities/Transportation
  70. Mining/Construction/Petroleum/Refining/Agriculture
  80. Manufacturer of Computers, Computer-Related Systems or Peripherals
  85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
2. TITLE/FUNCTION (Circle one)
 

IS/MIS/DP MANAGEMENT

  19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
  21. Dir./Mgr. MIS Services, Information Center
  22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
  23. Dir./Mgr. Sys. Development, System Architecture
3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)
 

Operating Systems

(a) Solaris	(e) Mac OS
(b) Netware	(f) Windows NT
(c) OS/2	(g) Windows
(d) Unix	(h) Net/Telep

App. Development Products ☐ Yes ☐ No

Networking Products ☐ Yes ☐ No

Intranet Products ☐ Yes ☐ No
4. Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)
 

(a) ☐ Internet software

(b) ☐ Internet browsers

(c) ☐ Web authoring/development tools
5. Do you use the Internet? ☐ Yes ☐ No

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Please complete the questions below.

1. BUSINESS/INDUSTRY (Circle one)
  10. Manufacturer (other than computer)
  20. Finance/Insurance/Real Estate
  30. Medical/Law/Education
  40. Wholesale/Retail/Trade
  50. Business Service (except DP)
  60. Government - State/Federal/Local
  65. Communications Systems/Public Utilities/Transportation
  70. Mining/Construction/Petroleum/Refining/Agriculture
  80. Manufacturer of Computers, Computer-Related Systems or Peripherals
  85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
2. TITLE/FUNCTION (Circle one)
 

IS/MIS/DP MANAGEMENT

  19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
  21. Dir./Mgr. MIS Services, Information Center
  22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
  23. Dir./Mgr. Sys. Development, System Architecture
3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)
 

Operating Systems

(a) Solaris	(e) Mac OS
(b) Netware	(f) Windows NT
(c) OS/2	(g) Windows
(d) Unix	(h) Net/Telep

App. Development Products ☐ Yes ☐ No

Networking Products ☐ Yes ☐ No

Intranet Products ☐ Yes ☐ No
4. Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)
 

(a) ☐ Internet software

(b) ☐ Internet browsers

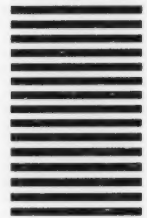
(c) ☐ Web authoring/development tools
5. Do you use the Internet? ☐ Yes ☐ No

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## In Depth

The Association for Computing Machinery (ACM) was created in 1947, making it the elder statesman of information technology groups. To celebrate its 50th anniversary, the ACM is looking ahead to the next half-century.

One major part of this celebration will be the March publication of *Beyond Calculation: The Next Fifty Years of Computing*. Editors Peter Denning and Robert Metcalfe invited nearly two

dozen of the industry's pioneers and clear thinkers to submit essays. The collection looks at scientific, social and economic effects of the continuing revolution in computing.

In anticipation of the book's publication, *Computerworld* is devoting four In Depth sections to exclusive excerpts from *Beyond Calculation*. This week's chapter is by Richard W. Hamming.

# The programming problem

The future  
DEMANDS  
that we write  
BETTER

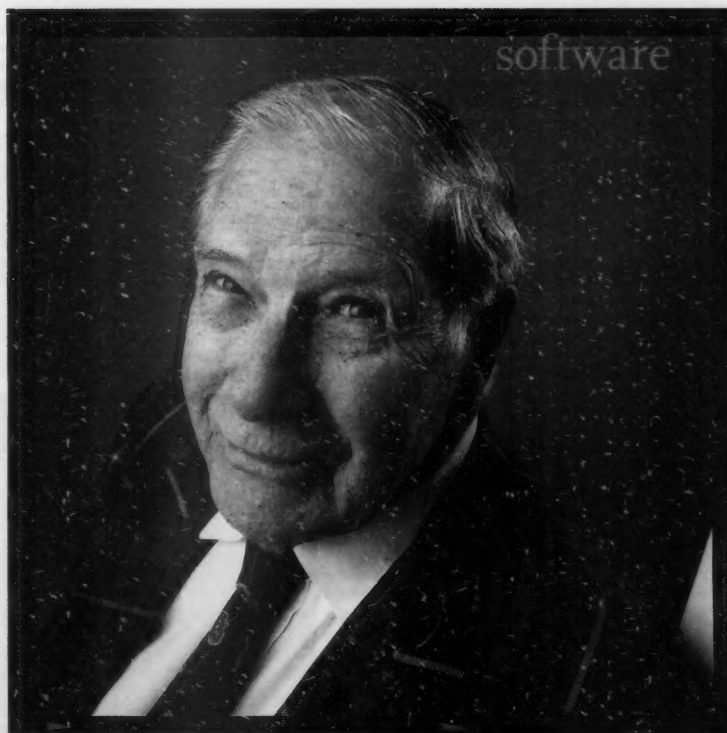
By Richard W.  
Hamming

**I**N VIEW OF THE PAST 50 YEARS of computing, it requires a brave person, or an idiot, to attempt a detailed and accurate prediction for the next 50 years. But without a vision of the future, we will tend to wander like the proverbial drunken sailor and will not successfully attack many of the important problems facing us. Hence, impossible as accuracy may be, it is nevertheless necessary to make some predictions.

We can confidently expect to see much more of what we now call "programming" being incorporated into the computer as delivered to the user. But this will not solve "the programming problem."

I have often used the analogy of novel writing with the writing of software. In both cases, the essence is that clear thinking is followed by the straightforward writing of the actual words. To what extent can great writing be taught?

The programming problem, page 78



software



# The programming problem

CONTINUED FROM PAGE 77

Shakespeare and Jane Austen did not take creative writing courses, and most people who take creative writing courses do not end up among the greatest writers. Similarly, all that programming courses can do, apparently, is make poor programmers a bit better. Experience, while necessary, seems not to be enough.

And there is little evidence that experience with many programming languages and many years of writing programs makes people much better at programming. Nor do we see major amounts of novels copied into other novels; hence, while I expect reusable software to help to some extent, I doubt that it will become a major part of essentially new programs.

Recent reports suggest that software writing has improved over the years at a rate of 4.5% per year, meaning that in the past 50 years it has become about 10 times easier to write a program (compared with the speedup of the computer, which is more than a millionfold in the same period).

Thus, until we have languages that help us think about the original problem and its proposed algorithms, there will be only slow improvements in programming effort. This flies in the face of the regularly reported speedups in the literature — indeed, if the savings in elapsed time were really true, then we would have the running programs before we had the problems.

The 4.5% annual improvement rate will probably continue for perhaps all of the next 50 years, and we will never really solve "the programming problem" regardless of what you may read in the fu-

ture literature of great breakthroughs in programming or silver bullets.

Neural networks promise some alleviation in programming — we simply write the underlying program to simulate the neural net, pick what seems to be an appropriate structure and let the machine find how to solve our problem without having to undertake the detailed programming ourselves. How many other ways are there to escape broad areas of programming? Are such approaches inevitably restricted to comparatively narrow fields?

Automatic programming can be seen as a variant on Huffman coding. The strings of bits that the machine needs to solve the problems we give it are apt to be long, whereas most of the short strings solve problems we are not interested in. What we want is a language that has short strings of bits for the problems we want to solve and long strings for the

problems we seldom, if ever, want to solve.

The programming problem is more a matter of getting rid of the poor programmers than anything else. It has long been true that good programmers outperform poor ones by more than a factor of 10, and the poor ones are a burden on the good ones. The way we teach programming does not in any way resemble how sports and other art forms are taught, and we had better look at how programmers learn to program rather than trying to fix the bad habits they develop in class and on their own.

But unfortunately, many of the current professors of programming are themselves poor programmers with no real sense of taste or style. They tend to think it is a matter of teaching cute, accurate, fast programming. Hence, it is a matter of slowly upgrading the whole profession, lifting ourselves up by our own bootstraps.

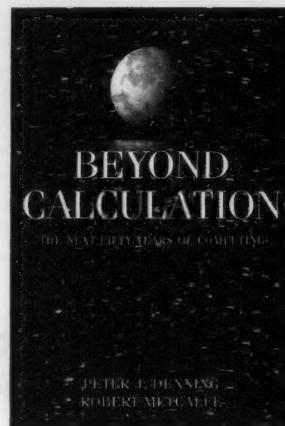
## SUPPORT FROM OTHER FIELDS

Engineering progress can do only so much to improve computers and to lower the costs still more, but essentially new discoveries can change the picture almost overnight and simply cannot be anticipated.

Most great advances in a field come from outside. The transistor was invented by the telephone company to improve service. Carbon dating and similar advances came not from experts in archaeology but from physicists.

The problem of where we can expect significantly new things to come from means we do not know where to look for them. Indeed, can we reasonably expect another 50 years without large changes in the way we see our problems in computer science? Who will make them if they do occur? Probably not the current experts.

There is an ambiguity in the view the public adopts toward computers. The comic view of the "nerd" programmer is at odds with the view that devotees of computers promise the end of all troubles. What many of the enthusiasts fail to realize is that the mere supplying of information that is not given any support as to its truth or falsity is of little value. And offering large amounts of unorganized and not carefully selected informa-



*Beyond Calculation:*  
The Next Fifty Years of Computing  
Edited by Peter Denning and Robert Metcalfe. Copernicus, New York, 1997.  
320 pages; \$27 (hardcover)

tion is also not what is widely wanted. A large menu of possible selections from which the user must make a choice is often an annoyance.

I have tried hard to avoid predicting what I wish would happen and to avoid wishful thinking, but of course I have not been perfectly able to do so. I think I have come closer to the fundamentals than most predictions of 50 years into the future. Time will tell, but being old, I will never find out whether mine are anywhere near correct; the younger people in the field will have to do the checking.

Hamming worked at AT&T Bell Laboratories for 30 years on a wide variety of projects. Often called the father of error-correcting codes, he received the 1968 ACM Turing Award for his work in that field. He is also both a recipient of and namesake for the IEEE Hamming Medal. He is now an author and an adjunct professor at the Naval Postgraduate School in Monterey, Calif.



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# DIRECTIONS

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## AGENDA

### 8:45-11:50 MORNING SESSIONS

- ♦ **Introduction**
- ♦ **Capturing the Top 10 IT Growth Opportunities**  
*Frank Gens, Senior Vice President, Research*
- ♦ **Will the Telcos Own the Internet? IT Opportunities and Impact**  
*Gigi Wang, Senior Vice President, Communications Industry Research*
- ♦ **Outlook for New Internet Technologies**  
*John Gantz, Senior Vice President, Personal Systems and Services Research*
- ♦ **Software Economics Beyond Microsoft: What Works?**  
*Tony Picardi, Group Vice President, Software Research*

Session A 1:15 - 2:00	Session B 2:15 - 3:00	Session C 3:15 - 4:00
<b>TRACK 1: Internet Hot Spots</b>		
Internet Technologies: Opportunities & Challenges Ted Julien	Jazz's Race to Overtake HTML Evan Quinn	New Media: Is It Ready for Prime Time? Bill Ahlborn
<b>TRACK 2: PCs for the Next Millennium</b>		
Plugging in the Toaster: IDC's Outlook on the Information Appliances Marketplace Bruce Stephen	The Vibrant World of the PC Eric Lewis	Semiconductor Opportunities: System on a Chip Solutions Mario Morales
<b>TRACK 3: Winning Software Strategies</b>		
The Application-Centered Data Warehouse Emerges: What Partners and Channels Should You Pursue? Henry Morris	Internet Applications...Is Client/Server Dead? Clare Gillan, Michael Sullivan/Trainer	BI's New Top: Can Microsoft Cut It in Constant? David Card
<b>TRACK 4: NT in the Enterprise</b>		
NT Adoption — How Fast Will It Happen? David P. Vellante	NT Servers and Clients: Building Winning Strategies Jay Bretmann	NT: Unix Killer or New Market Growth? Dan Kusnetzky
<b>TRACK 5: LAN/WAN Dynamics</b>		
Next-Generation LANs: Treasure and Target! Mark Leary	Extending the Enterprise: Remote Access, Wide Area Bandwidth, and More Lee W. Doyle	Network Management: Adding Value to the Package Rick Villars
<b>TRACK 6: Market Spotlight</b>		
The Battle for the Home: Global Prospects for New Media Products and Services Richard Zwetschenbaum	The Year 2000: Tools and Services Industry Gold Risk and the Realities of End-User Projects Tom Oleson	Japan and Asia/Pacific Market Outlook Philippe de Marillac

### 4:05-4:50 Keynote Address

*Dr. Robert M. Metcalfe, Vice President of Technology, IDG*

### 4:50

**Cocktail Reception**

# COMPUTERWORLD Editorial Calendar

## February - June 1997

Issue Dates			Ad Closings Color* B&W		Editorial Features		Show Distribution & Ad Readership Study Issues	
Feb.	Jan.	Jan.						
<b>3</b>	<b>17</b>	<b>24</b>			<b>Customer Satisfaction Quarterly:</b> Managers rate their networking vendors		<b>ComNet:</b> Washington D.C. 2/3 - 2/6	Starch Study
Feb.	Jan.	Jan.			<b>Special Feature (Managing, In Depth, Guide):</b> Computer Security <b>Closer Look:</b> Risk management systems in the financial sector			
<b>10</b>	<b>24</b>	<b>31</b>						
Feb.	Jan.	Feb.			<b>Buyer's Guide:</b> Unix RAID devices <b>IS Leadership Series</b> <b>Computerworld Healthcare Journal</b>			
<b>17</b>	<b>31</b>	<b>7</b>						
Feb.	Feb.	Feb.			<b>Buyer's Guide:</b> PC-based videoconferencing systems <b>Annual Premier 100 magazine</b> <b>Intranet Monthly</b>			
<b>24</b>	<b>7</b>	<b>14</b>						
March	Feb.	Feb.			<b>Closer Look:</b> Web usage tracking tools			
<b>3</b>	<b>14</b>	<b>21</b>						
March	Feb.	Feb.			<b>Buyer's Guide:</b> Massively parallel servers <b>Global Innovators quarterly supplement</b>			
<b>10</b>	<b>21</b>	<b>28</b>						
March	Feb.	March			<b>Closer Look:</b> Web-oriented peripherals <b>IS Leadership Series</b>			
<b>17</b>	<b>28</b>	<b>7</b>						
March	March	March			<b>Buyer's Guide:</b> Enterprise application development tools <b>Intranet Monthly</b>			
<b>24</b>	<b>7</b>	<b>14</b>						
March	March	March			<b>Careers:</b> IS staff training survey – the companies that do it best <b>Closer Look:</b> The scalability of data warehouse products			
<b>31</b>	<b>14</b>	<b>21</b>						
April	March	March			<b>Buyer's Guide:</b> Components and browser plug-ins			
<b>7</b>	<b>21</b>	<b>28</b>						
April	March	April			<b>Managing:</b> Technology for customer intimacy <b>Closer Look:</b> Intel workstations vs. UNIX <b>Spring Campus 1997 magazine</b>			
<b>14</b>	<b>28</b>	<b>4</b>						

\* Includes ads within special editorial features and premium positions.

**Editorial Contacts (508) 879-0700:** *Annual Forecast Issue* – Steve Ulfelder; *Closer Look* – Kevin Fogarty; *Buyers Guide* – James Connolly; *Managing, Leadership Series* – Allan Alter; *Electronic Commerce Journal, Premier 100* – Alan Alper; *Campus Edition, Best Places to Work* – Joyce Chutchian; *Intranet Series* – Anne McCrory



**Display Advertising**

**Black-and-White Display Ads:** Friday (5 pm EDT or EST) 10 calendar days prior to issue date.

**Color, Inserts, Premium Positions, and Special Feature Sections:** Friday (5 pm EDT or EST) 17 calendar days prior to issue date.

**Marketplace Advertising**

Closing date for Marketplace advertising in each weekly issue is Monday (5 pm EDT or EST) prior to each following Monday issue.

**Recruitment Advertising**

Closing date for recruitment advertising in each weekly issue is Thursday (3 pm EDT or EST) prior to each Monday issue.

**Direct Response Cards**

Computerworld will publish 12 Direct Response Card decks in 1997. Cxcomputerworld's Response Cards are mailed monthly to our subscribers in the United States.

Issue Dates			Ad Closings Color* B&W		Editorial Features	Show Distribution & Ad Readership Study Issues	
April	April	April	21	4	11	<b>Customer Satisfaction Quarterly:</b> Managers rate their server vendors IS Leadership Series	
April	April	April	28	11	18	<b>Closer Look:</b> Sonet update Intranet Monthly	
May	April	April	5	18	25	<b>Buyer's Guide:</b> Remote Access Servers <b>Managing:</b> Year 2000	<b>Networld + Interop:</b> Las Vegas, 5/5 - 5/9 Starch Study
May	April	May	12	25	2	<b>Special Feature (Managing, In Depth, Guide):</b> Object technology in the corporation	
May	May	May	19	2	9	<b>Buyer's Guide:</b> Enterprise DBMS IS Leadership Series	
May	May	May	26	9	16	<b>Careers:</b> Annual Job Satisfaction Survey <b>Closer Look:</b> Beyond Visual GLS Intranet Monthly	
June	May	May	2	16	23	<b>Buyer's Guide:</b> Web development packages	<b>Comdex Spring/ Windows World:</b> Atlanta, 6/2 - 6/5
June	May	May	9	23	30	<b>Managing:</b> Reskilling the IS organization <b>Closer Look:</b> RMON - Product comparison and who's using it <b>Global Innovators quarterly supplement</b> <b>Best Places to Work magazine</b>	
June	May	June	16	30	6	<b>Buyer's Guide:</b> Pentium Pro Servers IS Leadership Series	<b>PC Expo:</b> New York 6/17 - 6/19 Starch Study
June	June	June	23	6	13	<b>Closer Look:</b> Internet Email Software Intranet Monthly	
June	June	June	30	13	20	<b>Buyer's Guide:</b> PDAs	

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## IT Careers

**Be the inquisitor**  
For advice on how to conduct killer IS interviews, visit our Web site at [www.computerworld.com](http://www.computerworld.com)

To pass muster at job interviews, IS job candidates must know a multitude of skills, including the real meaning behind those . . .

# KILLER QUESTIONS

BY JOHN KADOR

Interviewing for information systems jobs isn't what it used to be. Only a few years ago, organizations that sought IS professionals focused exclusively on technical skills: coding proficiency, analysis experience and database management savvy. Interviewers paid little or no attention to the so-called softer skills: leadership, strategic planning, customer service, mentoring, quality and project management.

IS professionals now are expected to know all this and must be able to add value to the enterprise in many dimensions. *Computerworld* asked several IS managers, executive recruiters and IS consultants for their toughest IS interview questions. So in your next IS job interview, get ready for questions such as these, which test for service orientation, business savvy, communications skills and attitude.

**Q. What metrics can be used to measure user satisfaction with IS?**

"I'm looking for a candidate who proposes a service-oriented plan to work with end users, one that sets up baseline standards aligned with business requirements. A poor response suggests that managers should set the metrics independently or that the candidate should periodically survey the users to monitor their satisfaction. Bottom line: an understanding that unless end users participate in the formulation of the metrics, they are likely to be unhappy."

ANNE GINGRAS, A PARTNER AT SYSTEMS PARTNERS, INC. IN ORINDA, CALIF.

**Q. Describe a project in which you have been closely involved that didn't go particularly well. What went wrong, and what would have made the project more successful?**

"In the applicant's response, I look for the degree with which he or she takes responsibility for the project. I am impressed with applicants who take ownership of the situation and recognize the situation as an opportunity for improvement. A red flag goes up if the applicant blames other people or uses terms such as 'poorly defined project scope.'"

DWIGHT GIBSON, VICE PRESIDENT OF IS AT LEPRINO FOODS IN DENVER

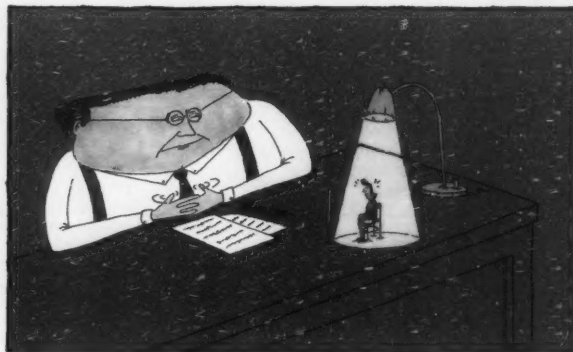
**Q. How would you reinvent our business from an IS perspective if you**

**had a blank sheet of paper and no resource constraints?**

"I want to determine if the applicant understands our business issues and what IS solutions they might put in place

user. Next, I like to hear that a good program is well-planned and well-documented. Unsatisfactory: any response that indicates the candidate will argue about what is best for the user. If the candidate uses technical terms such as GUI or OOPS, I know I may have a good technician but not a team leader."

KIRBY GLAD, AN ASSOCIATE AT PACER LEARNING SYSTEMS IN OREM, UTAH



to address those issues, allowing the business side to compete better, faster and cheaper."

JOHN SIFONIS, PRESIDENT OF SIBERG ASSOCIATES, INC. IN NEW YORK

**Q. How can you tell a good program from a bad one?**

"The response I am looking for is along the lines of, 'the program fills the user's needs.' I want to hear that the candidate is primarily concerned about the end

**Q. What has been the biggest achievement and biggest mistake of your career?**

"All applicants will crow about their achievements. But do they admit to mistakes? What kinds of mistakes? Big ones or trivial ones or virtues in disguise ('I work way too hard.')? Can the applicant admit to both achievements and mistakes, handle both, present both and, most of all, learn from both? Their response gives me a balanced appraisal of them and a sense of their honesty. The

question also gives me some idea of the scope of the work they have undertaken."

MICHAEL FREEMAN, CHIEF INFORMATION OFFICER AT WD-40 CO. IN SAN DIEGO

**Q. Describe the most difficult task you have ever had to perform using tool X, and describe how you managed to accomplish it.**

"The candidate's response tells me a lot about the technical skill of the developer, their reasoning/problem-solving abilities and their communications skills as they explain their approach to formulating and addressing the problem."

JOHN BONO, PRINCIPAL AT BONO CONSULTING IN BROOKFIELD, CONN.

**Q. When you've had a day at work that lets you kick back at home feeling satisfied, what was it that made you feel really good? What makes a bad day?**

"It's critical to distinguish candidates who may be great technicians but who would be uncomfortable dealing with people to the extent the position requires. This is important information because the jobs I'm staffing are people jobs. Technical people will offer as a reason for a really good day the solution of a really juicy technical problem. A bad day for them is often when they had to deal with other people."

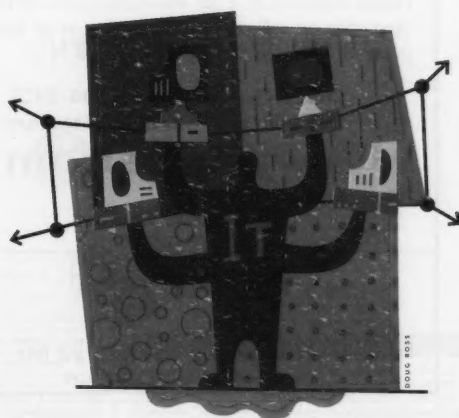
ELIZABETH ST. J. LOKER, VICE PRESIDENT OF SYSTEMS AND ENGINEERING AT THE WASHINGTON POST CO. IN WASHINGTON

Kador is a freelance writer in Geneva, Ill.

# Networking professionals are missing links

By Lynn Haber

**Companies are willing to pay top dollar for good IS networking professionals . . . if they can only find them**



**T**HE NATIONAL DEMAND for information systems professionals who have networking skills continues to far outstrip supply. And there's no letup in sight as companies continue to strengthen the communications links within their own organizations and between their customers and business partners.

"We try to do long-term planning and stay proactive so we can meet the hiring needs of our IS community in a timely manner. However, sometimes it still takes months to fill some network-related positions," says Joe Luppino, IS director at Eastman Kodak Co. in Rochester, N.Y.

The network skills most in demand include experience with Windows NT, TCP/IP, Internet/intranets, Unix, LAN/WAN connectivity, Notes, multiprotocol and platform familiarity, and integration.

When it comes to having networking skills, the more the merrier. That's because many organizations look for job candidates who can manage the big picture.

Kodak is looking for network-

ing experts in three areas: multiprotocol expertise to tie an existing legacy network to a globally deployed TCP/IP network, professionals who can implement network technology outside the U.S. and Canada and individuals who understand not only technology but also the business aspects of making basic financial decisions, such as meeting equipment suppliers and making presentations to management.

#### EXPERIENCE KEY

Three years' experience is the minimum for most network-related positions at Ernst & Young, an international technol-

ogy consultancy based in Lindhurst, N.J. With a technology support service group of 500 employees, demand is high for network professionals. The company has 30 openings at any given time, says Gerard Burgin, the company's director of staffing for national finance and technology.

The firm seeks to fill openings nationwide for network engineers, administrators, service specialists and help desk staff. The more technical positions, such as network engineers, are the most difficult to fill, Burgin says.

"These individuals have more technical knowledge and as-

sume greater responsibility within [the] organization," Burgin says. Considered internal consultants in the networking and communication areas, network engineers solve problems and review technical proposals and purchases. They also oversee design changes, installation and network infrastructure.

On any given day, there are hundreds of networking job openings at Robert Half International, a recruiting firm in Atlanta. "We see a growing demand for experienced network professionals with a strong Microsoft foundation," says Ron Wills, data processing placement counselor.

Network professionals with Windows NT experience are at the top of The Home Depot, Inc.'s recruitment list. "We continue to hire NT systems administrators with Windows 95 experience," says T. Reed Gary, technical recruiter for IS at the national home improvement supply company in Atlanta.

In the past 12 months, Home Depot filled 15 network-related information technology slots and started this year with three job openings. Also high on the company's skills list for network hires are Unix-related skills: TCP/IP, file transfer protocol, Network File System,

Hewlett-Packard Co.'s HP-UX operating system and Unix LANs. Gary says the company looks for senior networking job candidates with several years' experience.

#### LOCATION WOES

The shortage of skilled network professionals is a nationwide phenomenon, but a company's location can make a job search more difficult. That's the experience of J. B. Hunt Transport Services, Inc., a \$1.5 billion national transportation carrier based in Lowell, Ark.

"We have difficulty attracting talent to Lowell, but once we get them, they don't want to leave," says Bob Logan, chief information officer at J. B. Hunt. The talent shortage is a problem for the company because it continues to add remote sites to its network infrastructure every week. Since 1993, J. B. Hunt has added 130 remote sites, primarily customer sites, to its nationwide network and expects to add 66 more this year.

Although good job candidates are hard to find, companies say new hires are attracted by competitive salaries and good compensation packages.

Depending on the position, network designers, administrators and architects with three to five years of experience can command annual salaries of \$40,000 to \$60,000.

Managerial positions and more technical network specialists who have five or more years of experience, such as senior network designers, can expect annual salaries of between \$50,000 and \$80,000, according to Wills.

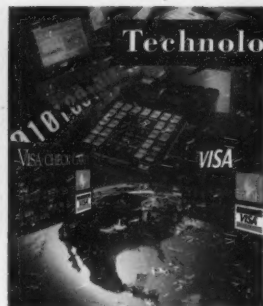
Haber is a freelance writer in Norwell, Mass.

#### SALARY EXPECTATIONS FOR NETWORKING PROFESSIONALS

Position	Boston	New York	Chicago	Atlanta	Houston	San Fran.
Manager of voice and data communications	\$60,000	\$67,000	\$52,000	\$65,000	\$47,000	\$78,000
Communications specialist	\$45,000	\$49,000	\$49,000	\$59,000	\$41,000	\$66,000
LAN manager	\$53,000	\$47,000	\$52,000	\$57,000	\$43,000	\$59,000
Network administrator	\$47,000	\$46,000	\$44,000	\$49,000	\$43,000	\$53,000

Source: Computerworld's 1996 Annual Salary Survey





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### Sr. Network Support Engineers

You will be a key team player of the newly created second level network support group. This team of fifteen individuals will provide 24x7 network support for VISA's global payment systems network. Specifically, you will provide complex problem identification and resolution, as well as participate in network design reviews. Experience with VTAM, SNA, FRAME RELAY, APPN, CICS, TPF, MVS, VM, UNIX and Network Topology are ideal.

### Sr. Network Engineers

You will provide technical solutions in the area of Client/Server computing. Primary emphasis will be on LAN/WAN communications, work group computing and planning and implementation of Internet and IP based solutions. Experience with TCP/IP, NT and UNIX a must.

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Temple-Inland Forest Products Corporation seeks a Director to manage Forest applications development in a distributed environment. Position requires a minimum of 5 years at the Director level with proven abilities in project management and System/Business analysis. Position will be responsible for the development and implementation of systems and technologies to meet the growth needs of the Forests Division. Forest Products background will be a plus. Position located in Diboll, Texas.

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EOE

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Bachelor's degree in computer science, information systems or a related field, and ten years of progressively responsible applications programming development experience with at least four of those years in a supervisory capacity. An equivalent combination of education and experience may be used to qualify applicants. Salary: \$43,139 - \$64,729 yearly. DOQ Closing Date: March 14, 1997

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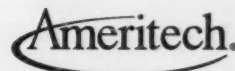
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## Project Analyst II

The Center for Computer Aided Design, The University of Iowa, seeks an individual to perform analysis, design and implementation of software components dealing with real-time visual databases formatted for Evans & Sutherland image generators. Design software to geometrically manipulate data generated from the MultiGen modeling package by combining smaller tiles to produce highly optimized real-time visual databases. Develop graphical visualization tools for Unix and PC platforms.

Responsibilities include the design and development of software tools that advance the Center's technology edge in areas of visual database manipulation and modeling for virtual environments. These tools are written in C and C++ on UNIX and PC platforms, utilize Inventor and OpenGI, manipulate MultiGen data files, and execute on Silicon Graphics workstations and Evans & Sutherland graphics hardware. The candidate will also be expected to prepare materials to be used for training and train junior staff members and graduate students in the use of high end workstations.

Applicants must have a Master's degree or an equivalent combination of education and work experience in computer science and a minimum of three years full time experience including two years experience in C and C++ programming in Unix and PC environments. At least 6 months experience with MultiGen modeling tool and its visual database formats for Evans & Sutherland image generators. Knowledge of the structure and organization of Evans & Sutherland databases. Strong background in geometric modeling fundamentals including curve and surface representation techniques. Experience with using OpenGI, GI and Inventor for 2D and 3D visualization on Silicon Graphics Workstations.

Salary is dependent upon qualifications. Forward resume, and two letters of reference to: Yannis Papadis, CCAD, The University of Iowa, 208 ERF, Iowa City, Iowa 52242-1000. The University of Iowa is an equal opportunity/affirmative action employer. Women and ethnic minorities are encouraged to apply.

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## PowerBuilder Programmer

To qualify, you must possess a BS or BA in Physical Science, Engineering, Mathematics or Business Administration and 4+ years' experience in computer systems analysis. Extensive experience with MS/DOS, MS/Windows, SQA Team Test, PowerClass, Data Modeling and PowerBuilder 4.0 or higher is required. Must have experience in design, implementation and testing of client/server applications. Experience with Oracle, Clipper, Microfocus COBOL, Mainframe COBOL, OEC Entera, Visual Basic, Access, Windows 95, C and C++ is preferred. UNIX and C Programming language knowledge is a plus. Excellent communication skills a must.

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Bachelor's degree in Computer Science, Engineering or related field, 5+ years' computer systems/administration experience; and excellent communication skills are required. Must have experience in SAP Basis, Correction and Transport System, Client Copies and Database reorganizations along with UNIX experience, preferably in ADX. Oracle experience is preferred.

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For immediate consideration, FAX your resume to: (713) 432-5663 or send your resume/salary history and area of interest to: **ASC Staffing Services, 06J-11-97, P.O. Box 4530, Houston, TX 77210-4530. Or access Job Opportunities on our home page: <http://www.careersar.com/cm/aramco/>.**



ARAMCO SERVICES COMPANY

**Senior Programmer Analyst** - Develop and conduct feasibility studies including economic, technical and operational factors; identify and correct network or software malfunctions; supervise the maintenance of systems and networks; develop business system, computer system, network and/or conversion designs including an electronic trade services system; supervise testing and installation of these systems and evaluate installation after completion; train and supervise technical personnel. Duties include use of Novell, Microsoft: Visual BASIC, C, Fox Pro, Visual C++, and Borland C++.

2 years college, major field of study in Applied Sciences or Computer Science or Computer Information Systems required. 3 years experience in the position or 3 years as Project Manager and/or Systems Support Manager and/or Director of Core Application Technology or any combination thereof required. Experience in related occupation(s) must include experience developing an electronic trade services system, providing system support for such a system and using Novell, Microsoft: Visual BASIC, C, Fox Pro, Visual C++, and Borland C++.

40 hrs./wk. 8:15 a.m. - 5:00 p.m.; \$57,000/year. Must have proof of legal authority to work permanently in the U.S.

Send 2 copies of both resume and cover letter to Illinois Department of Employment Security, 401 South State Street - 3 South, Chicago, Illinois 60605. Attention: Joan Sykustus, Reference Number V-IL-16072-S. NO CALLS. AN EMPLOYER PAID AD.

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Frankenmuth Mutual Insurance Company, a leader in the Property and Casualty Insurance Industry, is seeking candidates for current and future opportunities in the Information Technology group:

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- **Systems / Operations Supervisor**
- **Network Administrator**
- **Agency Company Interface Business Analyst**
- **MVS Applications Developer**
- **Client / Server Application Developer**

The current systems environment includes: MVS/ESA, CICS V2, RACF, JES2, Sterling Software storage management products, CA Librarian, Netware, NT server, and SQL Server. Expansion plans include: OS/390, DB2 for MVS and NT, CICS V4, COBOL II, Microfocus COBOL, C, Smalltalk, Netware 4 and expansion of the NT Server environment to support internet/intranet applications. The current PMSC Series II CICS / COBOL applications environment will be replaced and enhanced over time with PMSC Series III Client / Server systems.

If you are interested in a challenge with a growing and financially stable company, please submit your resume and salary requirement to: Frankenmuth Mutual Insurance Company, Human Resources-CW, One Mutual Avenue, Frankenmuth, MI, 48787 FAX: 517.652.3588. e-mail: [PMCCAIN@CONCENTRIC.NET](mailto:PMCCAIN@CONCENTRIC.NET). Web: [WWW.FMINS.COM](http://WWW.FMINS.COM). EOE



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CLIENT/SERVER DEVELOPERS

NETWORK & TELECOM SERVICES  
SYSTEMS PROGRAMMERS/DATA ANALYSTS  
DESKTOP SVCS. & ENTERPRISE MESSAGING

## Directions:

Exit #24 from  
Rt. 128/95.  
Right onto Rte. 30 East.  
Hotel is 1/4 mile ahead  
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If you are unable to attend the  
Job Fair but are ready to declare  
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email your resume to:

Bill Hickmott, Liberty Mutual  
Information Systems, 225 Northwch  
Avenue, Portsmouth, NH 03801.  
Fax: (603) 431-0799  
Email: jobs@lmg.com

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Monday, February 10, 1997

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**Database Developer** - Will focus on developing a database for web-based information searches.

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Programmer/analyst with a minimum of 3 years of experience in COBOL, maintenance and development in an IBM compatible mainframe environment. CICS, DB2 programmer/analyst preferred, but not required. Some positions require YEAR 2000 conversion knowledge.

CBSI offers competitive salaries and a comprehensive benefits package. To apply for any of the above positions, send resume to:

Computer Based Systems, Inc.  
2750 Prosperity Avenue, Suite 300  
Fairfax, VA 22031  
FAX: (703) 849-9282  
e-mail: [hrinfo@hqlink.cbsi.com](mailto:hrinfo@hqlink.cbsi.com)  
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- B.S. Degree in Computer Science or related field.
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- Programming experience and MSCE preferred.

For consideration, submit a resume or application specifying the position of interest to:

HUMAN RESOURCES DEPT.  
**VALLEY HEALTH SYSTEM**  
333 WEST CORK ST.  
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EOE M/F/D/V

## IT CAREERS MIDWEST

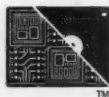
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#### LAN/WAN SYSTEMS ADMINISTRATORS

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Seeking applicants with a B.S. in Computer Science or a related field and at least five years experience with AS400 PC Network installation and Support/Peripherals.

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This position will assist in the analysis, design, coding, testing and implementation of the automated clinical documentation system ("Caremaster"), and other VHS systems as developed. A B.S. degree in Computer Science or Information Systems, and five years experience in a health care setting, specifically with software application, is preferred.

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Should have B.S. in Computer Science or related field, plus previous work experience with IBM AS/400 and RPG III. IBAS SERIES 4000, HBOS software exp., and health care experience is a plus.

For consideration, please submit resume and cover letter specifying the position of interest to:

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333 WEST CORK ST.  
WINCHESTER, VA. 22601  
FAX (540) 665-5320

EOE M/F/D/V

**APPLICATIONS ENGINEER** to research, analyze, design, implement, test, debug and enhance electrical engineering and process automation applications using advanced knowledge in electrical engineering including analog and digital circuits, electrical instrumentation, and ladder logic. Write C, SQL, and UNIX scripts for RDBMS and GUI front-end development for DCS and SCADA applications. Perform systems configuration for real-time data acquisition and process control applications including technical specifications, electrical schematics, panel drawing, circuit analysis, logic diagrams, electrical equipment selection, system modeling, multi-platform porting, format conversion and project documentation. Conduct hardware setup, MMI interfacing, systems integration, and instrument communication over Ethernet LAN using TCP/IP and RS232 protocols. Simulate, trouble-shoot, evaluate and recommend process control schemes according to customer's specific application needs. Require: M.S. in Electrical Engineering with two years of experience in the job offered or in the related occupation of Electrical Engineer. Salary: \$47,500/year. M-F, 8:30 a.m. to 5:30 p.m. Apply in person or by resume to: Hodder W. Pryor, Factory Automation Systems, 1902 Providence Court, College Park GA 30337. Attn: Dept. A.

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- Mail Messaging and Electronic Commerce
- Manufacturing Execution Systems
- Applications Development and Integration
- Information Management
- Communications Industry Solutions
- Enterprise Networks and Platform Technologies
- Enterprise Applications
- Internet/Intranet

To qualify, you must have in-depth experience in one or more of the following technologies: UNIX, UNIX/NT, TeMIP, MS Exchange, X.400, X.500, Lotus Notes, Database Architecture, Data Warehouse development, Internet Commerce, C++, and Application Migration/Infrastructure. You are especially encouraged to apply if you are a Microsoft Certified Systems Engineer or have made progress towards MS Certification Systems Engineer certification by achieving individual MS certification in the following areas: MS Windows NT Server and Workstation, MS Exchange, or MS SQL.

**Program Managers** If you have a proven track record in the successful completion of customer programs in the above mentioned market segments — we want you to join us! You will demonstrate and apply industry and technology-specific knowledge in Program Management methodology to plan, control and manage delivery of programs to customers. This includes, but is not limited to, proposal development and submission, program start-up, quality management, P&L responsibility and development of team members. You will also manage customer resources, third-party and sub-contractor resources.

Additionally, the following opportunity is now available with our Operations Management Services Business Unit.

**Engagement Managers** You will provide technical financial and service feature knowledge in connection with IT systems outsourcing. This involves leading clients in determining their business needs and developing long-term, customized outsourcing solutions for hardware, software and services. To qualify, you must have proven senior-level IT leadership experience in the creation and implementation of large, complex information systems projects and programs focused on business process support and improvement. In addition, the ability to defend technical, financial and operational aspects of complex, multi-million dollar outsourcing solutions is essential. Executive-level consultative selling experience with large, complex outsourcing solutions is preferred. Client/server expertise in one or more of the following areas is also highly desired: distributed systems management, application operations management, desktop management and Internet/Intranet management.

The above positions are available in Albuquerque, Atlanta, Boston, Chicago, Cincinnati, Cleveland, Colorado Springs, Dallas, Dayton, Denver, Detroit, Hartford, Houston, Indianapolis, Irvine, Los Angeles, Metro New York/New Jersey, Milwaukee, Minneapolis, Philadelphia, Phoenix, Rochester, San Francisco, San Jose, St. Louis, and Washington D.C.

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**Systems Analyst -** Analyze user reqs, design, develop, implement Info. Mgmt Systems on IBM/MS hardware using DB2, CICS and COBOL. Define/establish DB2 database structure. Prepare program specs and system docs. 40 hrs/wk; 8AM-5PM; \$56,000/yr. Req. Bach. in Comp. Sci. Math or any Engineering field & 2 years exp. Employer is a consulting firm. Relocation to various client sites for periods of 6 months to 2 years is required. Send resume to Job Service of Florida, 1001 EXECUTIVE CENTER DRIVE, ORLANDO, FL 32803-3520 Re: Job Order Number FL-1547061.

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**SENIOR DATABASE DEVELOPER & ADMINISTRATOR** required. Design, development, validation & installation of front end for Oracle 7.x databases in client/server environment using Oracle Suite utilities and Oracle Developer 2000 tools. Develop Graphical User Interfaces in PowerBuilder & Visual Basic & program using MS Windows external function calls & UNIX Shell Scripting. Master's degree or equivalent required in any Computer and/or Engineering related curriculum plus 1 year experience in the job duties described above. Must be willing to relocate to various unanticipated work sites throughout USA every 2 to 10 months - Employer will reimburse travel expenses between assignments. Must have proof of legal authority to work in the U.S. Salary - \$46,000/year for a 40 hour work week. Interested applicants send resume to Job Service of Florida, 2660 W. Oakland Park Blvd., Ft. Lauderdale, FL 33311-1347, Re: Job Order Number FL-1546038. Ad paid by an Equal Opportunity Employer.

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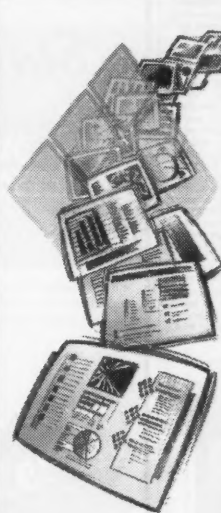
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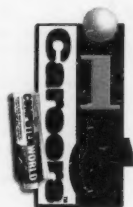
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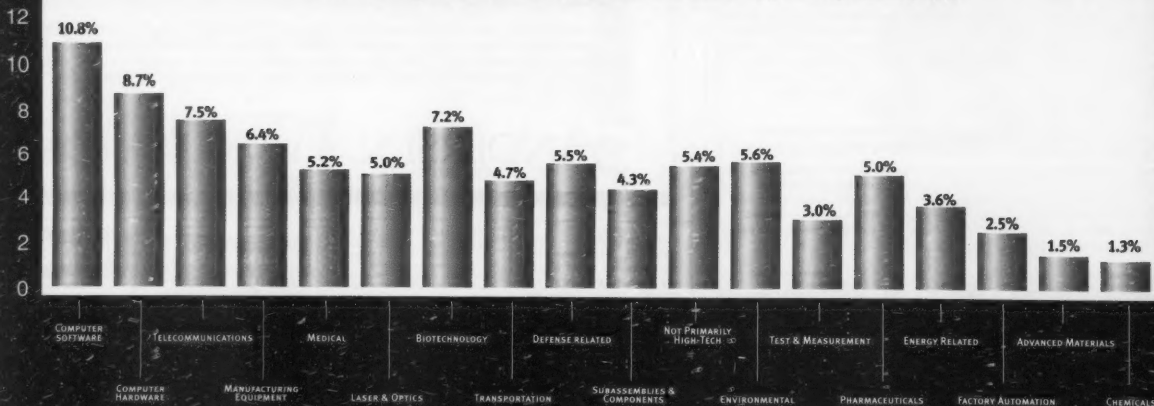
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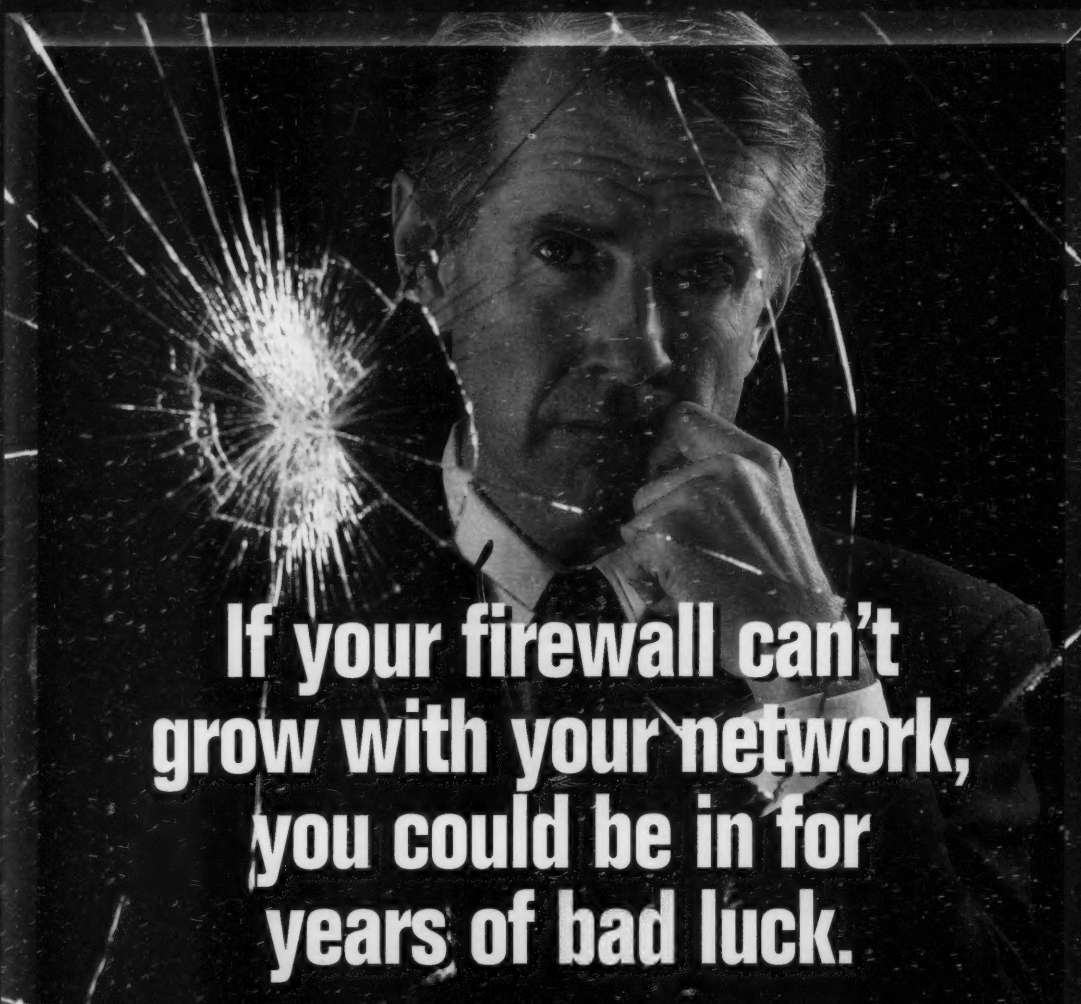


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# IBM's Wake-on-LAN REMOTELY ROUSES SLEEPING CLIENTS

**SUMMARY:** This combination of proprietary hardware and software, available in LAN- and Internet-based versions, can remotely power up outlying workstations and servers.

**S**URRYING AMONG hundreds or thousands of workstations to install updates, inventory software, track assets or fix configuration problems steals time from your important jobs and prevents users from working. IBM's Wake-on-LAN lets administrators power up a machine at a remote location. Several vendors offer products for centralized management, but IBM officials say the company's remote wake-up feature will let administrators perform several tasks at times when network traffic is low and users are removed from the equation. That eliminates the disruptions to users caused by system maintenance. Unlike the offerings from many competitors, IBM's remote system-administration product doesn't require users to leave the remote machines running.

The system consists of a specially modified 10M bit/sec. Ethernet adapter designed to respond to an incoming coded signal generated by

IBM's Tivoli Management Environment (TME) 10 NetFinity remote management software. The signal consists of an encoded data stream, repeated 16 times to minimize accidental activation.

The adapter, powered by a full-time 5V trickle feed from the power supply, sends a signal to the motherboard to power up the workstation or server. The coded signal can wake up one, several or hundreds of machines.

TME 10 NetFinity, codeveloped by IBM and its Tivoli Systems, Inc. subsidiary, is reasonably straightforward to use once you've read the on-line manual. It provides a variety of monitoring functions, including File Transfer; Software Inventory; Remote Session, which hands over control of a remote system as if its keyboard were on your desk; Screen View, which takes a snapshot of the remote screen, providing a simple method to archive configuration files; and Process Manager, which can help to debug misbehaving software and hardware.

IBM offers Wake-on-LAN on its PC 300 and 700 models. The Industry Standard Architecture network card adds about \$120 to the cost of the machine. I tested Wake-on-LAN

on a small Ethernet network running Windows 95's peer-to-peer software and Artisoft, Inc.'s LANtastic. Other network protocols that Wake-on-LAN supports include Windows 95, Windows NT, IBM's OS/2 Warp and Novell, Inc.'s NetWare. A Token Ring model of the Ethernet card is also available. The product runs on all Intel Corp.-based systems.

### RELIABLE REMOTE

The system performed reliably. I used NetFinity's Event Scheduler to transfer files immediately and schedule a future transfer. It was easy to use the system to inventory the remote machine's software. The remote unit consistently awoke and shut down when it was supposed to. Powering down the remote computer was as easy as choosing a command from the Remote Session module.

IBM originally designed Wake-on-LAN as a way to reduce the cost of ownership of machines on a LAN. The optional NetFinity Web Manager provides the same feature set over a TCP/IP connection.

The network interface card proved adequate for the system-administration tasks, which are relatively



slow and not particularly performance-sensitive. The same card also serves as the primary network interface for all other client/server data exchanges. In the second quarter, IBM plans to release a 10M/100M bit/sec. Peripheral Component Interconnect card that will offer higher throughput.

The company also plans a third-quarter release of a software-control system that will allow remote computer activation directly from an operating system command — by typing in the name of the mapped drive, for example. That would eliminate the need to use NetFinity.

*Millman operates Data System Services Group, a networking and problem-solving consultancy in Croton, N.Y. He is co-author of the forthcoming Netscape Server Bible from IDG Books Worldwide. His Internet address is hmillman@mcimail.com.*

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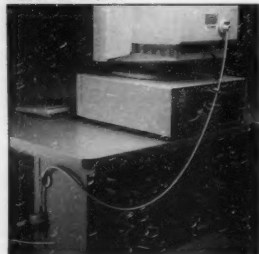
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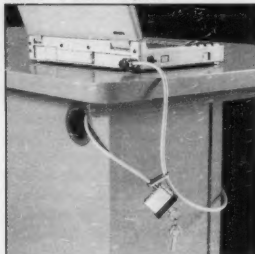
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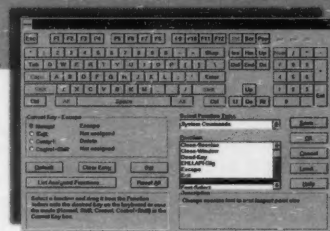
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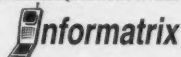
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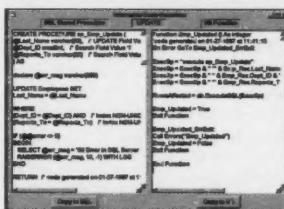
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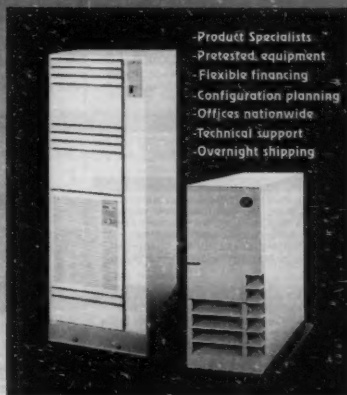
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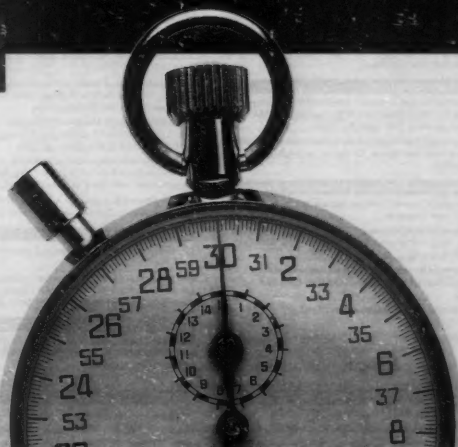
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http://www.compaq.com		http://www.powersoft.com	
Computer Associates	7, 22-23, 42-43	Progress Software	48
http://www.cai.com		http://www.progress.com	
Data Dimension	29	SAP America	54-55
Digital Equipment Corp.	13	http://www.sap.com	
http://www.digital.com		SAS Institute	21, 59
Encore	10	http://www.sas.com	
http://www.encore.com		Silicon Graphics Com.	40
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## Gainers



## Losers



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Datamart Corp.	19.5
Quantum Corp. (H)	19.1
ParPlace Systems Inc.	18.5
Optical Data Systems Inc.	16.1
Network Computing Devices	16.0
Date Race Inc.	15.2

DOLLAR	
Intel Corp. (H)	10.38
Texas Instruments (H)	7.00
IBM	7.88
Microsoft Corp. (H)	6.81
Quantum Corp. (H)	6.19
Compaq Computer Corp. (H)	5.13
Western Digital Corp.	4.38
Northern Telecom Ltd. (H)	4.00

## INDUSTRY ALMANAC

### Cascade stock takes a tumble

Cascade Communications Corp. (Nasdaq:CSCC) shares should begin to recover from a recent nosedive, analysts predict, but don't expect a full rebound anytime soon.

"We're expecting the frame-relay equipment market to grow by about 40% in 1997, so we're still very positive on Cascade," says Joseph Noel, a securities analyst at Hambrecht & Quist, Inc. in San Francisco.

Cascade's stock tumbled 36% Jan. 24 after analysts, concerned that the company couldn't maintain its explosive growth rate, downgraded their expectations. Several brokerage houses and rating services lowered their recommendations to buy Cascade stock from a strong buy to a standard buy.

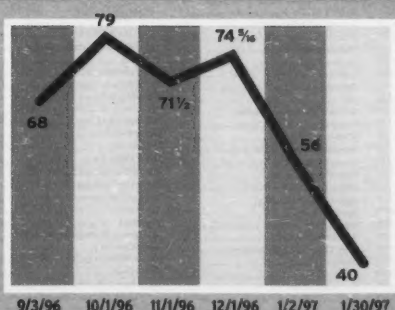
Analysts were also concerned that Cascade might have pushed so hard to close orders in its fourth quarter that first-quarter performance might have been affected, says David Parrish, vice president at The Advest Group, Inc. in Boston.

Westford, Mass.-based Cascade reported fourth-quarter revenue increased 139%, to \$110 million from \$46 million, in 1995. Net income for the quarter increased to \$23.4 million, or 24 cents per share, compared with net income of \$9.1 million, or 10 cents per share, for the same period last year.

Another factor in the switch maker's stock slide was its own growth projections of 30% to 50%, down from the more than 100% growth Cascade has had in the past.

Parrish says he expects Asynchronous Transfer Mode (ATM) equipment, which represents about a quarter of Cascade's revenue, to become "a higher growth area" for the firm as many businesses turn to more expensive ATM equipment to expand capacity of their frame-relay networks. — Kim Girard

### CASCADING STOCK PRICES



Stock	52-Week Range	Jan. 31 '97	Week's % Chg.	52-Week % Chg.	
Communications and Network Services					
COMS	81.38-133.50	100.00	-1.75	-2.5	
AIT	66.88-49.63	AMERITECH CORP.	59.25	1.13	19
T	46.88-31.63	AT & T	39.25	1.25	33
ASND	80.23-35.50	ASCEND COMMUNICATIONS (H)	70.50	-2.63	14
BYN	10.75-3.25	BANYAN SYSTEMS INC.	4.50	-0.38	-27
BAY	49.00-18.13	BAI NETWORKS INC.	21.88	-0.88	-38
BEL	80.38-43.50	BELL ATLANTIC CORP.	66.50	0.25	04
BL	45.50-15.25	BELL SOUTH CORP.	44.38	1.50	33
BKCT	42.25-13.50	BROOKTRUST TECHNOLOGY	26.00	0.50	-19
CT	43.63-26.50	CABLEVISION SYSTEMS	34.88	0.38	11
CRC	21.13-11.63	CENTIGRAM COMMUNICATIONS	13.63	1.00	79
CSCO	73.75-40.25	CISCO SYSTEMS INC.	68.38	0.75	11
CLM	9.25-3.44	COMPASSION LABS INC.	1.44	-0.31	-83
CNMT	10.50-4.00	COMPUTER NETWORK TECH.	6.19	-0.06	-10
CMC	12.75-4.75	COMSCOM	8.50	0.75	83
DIGI	36.50-12.63	DSC COMMUNICATIONS	22.50	1.00	-43
FORE	44.75-23.50	FORE SYSTEMS INC.	29.13	-0.38	-13
GE	18.88-9.13	GENERAL DYNAMICS CORP.	18.25	0.38	38
CSX	46.00-13.63	GENERAL SIGNAL INDUSTRIES	45.50	0.25	06
GTE	49.25-37.13	GTE CORP.	47.00	2.75	62
LSI	57.25-28.75	LOGIC TECH. (H)	56.25	2.88	54
MAGE	46.63-8.13	MAGE NETWORKS NV	14.75	0.50	33
MCI	35.50-22.38	MCI COMMUNICATIONS CORP. (H)	34.88	0.38	11
MVPI	14.50-5.13	MICROCOM INC.	13.13	1.13	55
NETC	18.88-4.81	NETNASCARE INC. (L)	3.25	0.25	50
NTRX	10.88-3.25	NETRIX CORP.	5.13	-0.19	-35
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NV	17.25-20.25	NORWEL COMMUNICATIONS	14.63	2.25	61
NT	73.38-43.88	NORTHERN TELECOM LTD. (H)	71.38	4.00	58
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NOV	22.25-42.00	NOVATECH INC.	39.38	0.25	03
OC	31.75-15.50	OCTEL COMMUNICATIONS CORP.	17.88	0.00	00
OPT	29.00-11.25	OPTICAL DATA SYSTEMS INC.	16.25	2.25	161
PAC	39.38-25.88	PACIFIC TELECOM (H)	38.00	0.75	20
PCL	44.75-18.50	PICTURETEL CORP.	18.50	-2.75	-129
PTON	7.50-2.06	PROTEON INC.	2.50	0.00	00
QCOM	7.00-3.50	QUALCOMM INC.	6.31	8.50	608
RETX	10.88-1.88	RETRIX CORP.	4.75	-0.38	-73
SCS	60.25-46.00	SCS COMMUNICATIONS	54.25	1.25	24
SCIA	20.38-12.50	SCIENTIFIC COMPUTER CORP. (H)	16.38	0.25	03
SHVA	87.25-17.88	SHIVA CORP. (L)	18.25	-1.00	-52
SPR	45.50-34.50	SPRINT CORP.	40.00	1.25	31
SHMC	18.75-8.13	SHARMA MICROSYSTEMS CORP.	9.13	0.00	00
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USC	11.13-5.50	US WEST INC.	27.25	0.50	19
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XMC	1050	400	COMPUTER NETWORK INC.	6.75	-0.06	10
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GSC	1888	513	GENERAL DYNAMICS INC.	10.25	0.38	36
GENL	1888	513	GENERAL DYNAMICS INC.	10.25	0.38	36
GTE	4925	3775	GTE CORP.	40.00	2.76	62
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MCIC	3550	2238	MCI COMMUNICATIONS Corp. (H)	14.88	0.38	11
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NETS	3005	1525	NETWORK GENERAL	28.50	2.00	70
NTL	7338	4888	NORTHERN TELECOM LTD. (H)	71.38	4.00	58
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Stock	52-Week Range		Jan. 31 '97	Week's % Chg.	52-Week % Chg.
AOL	68.00-21.13	AMERICA ONLINE	37.75	1.25	34
BBN	34.75-13.63	BBN CORP.	14.00	-1.00	-40
CBN	31.50-18.63	COMPUSEARCH CORP.	10.75	-0.19	-16
EDFY	35.75-13.13	EDIFY CORP. (L)	13.38	-2.13	-137
LCOS	29.25-7.75	LYCOS INC.	16.25	-1.38	-67
NETC	46.50-12.25	NETSCAPE COMM. CORP.	38.13	0.38	10
NSCP	86.00-50.00	NEUSOFT CORP.	55.25	0.88	61
OMET	42.25-11.50	OPEN MARKET INC.	12.25	-0.63	-51
PSIX	19.38-6.75	PSI INC.	6.63	0.50	78
QOER	18.88-3.94	QUARTERDECK CORP.	5.19	-0.31	-57
RAPT	39.25-12.75	RAPTOR SYSTEMS	20.63	-0.88	-41
SECB	17.88-6.00	SECURE COMPUTING CORP.	2.88	-0.13	-104
SPYG	43.00-10.00	SPYGLASS INC.	12.50	-0.25	-20
YHOO	43.00-15.50	YAHOO!	34.50	1.63	49

WALL	15.63	8.00	WALL DATA SYSTEMS	11.13	0.18	2.8
WALL	27.50	12.25	WALL DATA SYSTEMS	19.25	1.38	7.7
WANG	26.11	15.38	WANG LABORATORIES INC.	23.25	0.50	1.7

ABN	74.00	22.38	ABN ON-LINE	37.75	1.25	3.4
BBC	31.75	15.63	BBC CORP.	37.00	-1.00	-4.0
CBR	26.50	12.50	CBR CORP.	19.17	-0.17	-1.7
EDF	55.25	13.13	EDF CORP. (L)	13.38	-2.13	-13.7
LYC	29.25	13.75	LYCOS INC.	16.75	-1.38	-7.6
NEC	26.50	12.50	NEC CORP.	13.00	0.50	3.8
NSC	68.00	34.50	NETSCAPE CORP.	18.21	0.38	1.0
OMK	42.25	11.50	ONEMARKET INC.	25.25	0.88	6.1
PSG	19.13	9.75	PSYNERGY	16.63	0.50	3.5
QRT	19.88	9.4	QUARTERCOM	5.93	-0.31	-5.7
RQF	39.25	12.75	ROBERTS SYSTEMS	20.63	-0.88	-4.1
SCB	26.50	12.50	SEABOARD CORP.	18.88	-0.88	-4.6
SPHC	43.00	10.00	SINGLINS INC.	12.50	-0.25	-2.0
TYO	43.00	15.00	TYMOH INC.	34.00	1.63	4.8

	52-Week Range	Jan. 31 '97	Week's % Chg.	52-Week % Chg.		
AMD	35.13	10.25	ADVANCED MICRO DEVICES	35.13	36.3	17.4
APCC	29.00	22.75	ANALOG DEVICES	29.00	2.00	7.4
ADPT	46.88	26.50	ADAPTEC TECHNOLOGIES	13.88	-1.18	-2.6
CBEX	7.63	1.50	CHRYSLER	1.6	0.25	16
CTIX	16.63	9.37	CYRESS SEMICONDUCTOR CORP.	12.63	-0.25	-1.9
CYR	30.50	11.50	CYRUS	25.63	2.75	12.0
BACE	24.50	16.50	DATA RACE CORP. (H)	10.63	10.16	45.3
DTM	11.13	17.00	ISL LOGIC CORP.	15.00	1.38	4.1
ESCC	35.13	29.75	INTERTEC SEMICONDUCTOR (H)	32.25	3.80	5.3
EXBT	45.00	12.00	MICEL SEMICONDUCTOR INC.	38.00	2.75	7.3
ISLP	10.11	26.50	INTEGRATED TECHNOLOGY (H)	35.75	1.18	3.1
IOM	60.75	44.13	MOTOROLA INC.	68.00	1.63	2.4
MTSI	27.50	13.00	NATIONAL SEMICONDUCTOR	27.63	36.3	10.5
PNCL	66.25	20.00	PHINIA MICRO INC.	10.13	0.25	2.5
QMG	6.75	3.75	QMG INC.	5.63	0.63	10.9
QUAN	38.50	18.88	QUANTUM INC.	45.75	2.00	4.6
RDUS	4.88	0.34	XILIX INC.	25.00	-2.63	-5.5

Stock	52-Week Range	Jan. 31 '97	Week's % Chg.	52-Week % Chg.	
APCC	31.50-7.88	AMERICAN POWER CONVERSION	26.83	0.06	6.2
ADPT	48.68-17.50	ADAPTIC INC.	23.38	-0.06	3.1
CMEX	7.63-1.50	CAMBER CORP.	1.63	0.00	0.0
CHVR	54.00-15.00	COMPUTER HOLDINGS LTD. (H)	32.25	1.43	1.4
DATA	24.50-3.75	DATA RACE INC.	19.00	2.50	15.2
DTM	11.13-4.43	DTA CORP.	11.13	1.81	19.5
ENR	38.88-16.50	ENR CORP.	37.75	1.88	5.2
EMSL	31.50-1.00	EMULSER CORP.	13.31	1.88	10.3
ESXC	29.00-19.50	EVANS AND SUTHERLAND	23.50	0.75	3.1
EXBT	22.75-9.50	EXARTE	10.75	0.00	0.0
EXST	51.50-11.50	EXCEL SYSTEMS, SYSTEMS	22.50	0.13	0.1
IOHM	55.13-6.50	IOHMEGA CORP.	17.38	-0.88	-4.8
ISPL	8.25-1.25	IPL SYSTEMS INC.	1.94	0.19	10.7
IMAG	17.00-17.63	ROMING INC.	29.50	0.75	26.8
INAC	40.63-14.63	INGRAM CORP.	23.88	-0.38	-19.0
INEL	11.50-3.50	INTELLIGENT ELECTRONICS	4.31	0.44	11.3
PEAK	19.50-10.13	PERKINS TECHNOLOGY GROUP	11.25	-0.25	-2.2
PNAL	26.25-2.00	PINNACLE MICRO INC.	5.13	-0.44	-7.9

QNTM	38.50	10.88	QUANTUM CORP. (M)	38.50	6.19	19.1
RDUS	4.88	0.34	RADIUS INC.	0.44	0.00	0.0
SEC	51.88	18.13	SEAGATE TECHNOLOGY (H)	51.88	4.00	8.4
STK	54.38	24.06	STORAGE TECHNOLOGY (H)	48.88	-2.13	-4.2
STLC	8.75	0.63	STRATEGIC CORP.	0.69	0.03	4.3
TEK	52.25	29.75	TEXTRONIX INC.	49.63	-0.13	-0.3
WDC	75.88	17.13	WESTERN DIGITAL CORP.	72.63	4.38	6.4
XRX	61.13	39.88	XEROX CORP. (H)	58.75	0.25	0.4



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# Companies in this issue

Page number refers to page on which story begins. Company names can also be searched at [www.computerworld.com](http://www.computerworld.com).

3Com Corp. .... 57,73	Candle Corp. .... 45,51	FileNet Corp. .... 70	Iridium LLC .... 51	Novell, Inc. .... 8,24,38,51,73,87	Storage Dimension .... 41
3iBabe, Inc. .... 4	Capital One Financial Corp. .... 61	First Union Corp. .... 6	J.B. Hunt Transport Services, Inc. .... 89	Oracle Corp. .... 8,48,105	Sullivan & Worcester LLP .... 73
Alandor Group, Inc. .... 24,51	Case Technology .... 51	First USA, Inc. .... 6	JC Penney Co. .... 51	Oxford Resources Corp. .... 61	Sun Microsystems, Inc. .... 1,4,45,61,105
Accolad Technology Corp. .... 61	Case Technology .... 51	First Virtual Corp. .... 30	Joan Nymen Associates .... 70	Pacer Learning Systems .... 82	SuperComm, Inc. .... 16
Adobe Systems, Inc. .... 24	CCL Label .... 73	Ford Motor Co. .... 1,69	John Hancock Mutual Life Insurance Co. .... 61	Pacific Coast Feather Co. .... 61	Symantec Corp. .... 24
Adson Insurance Group .... 24	Central Grocers Cooperative, Inc. .... 28	Fraudenburg/NOK General Partnership .... 57	Kaiser Permanente of Southern California .... 105	PC Docs, Inc. .... 57	Systech Technology, Inc. .... 16
Advent, Inc. .... 57	Charles Schwab & Co. .... 57	Key Tronic Corp. .... 41	KFC, Inc. .... 70	Peak Technologies, Inc. .... 45	Systems Partners, Inc. .... 82
Albrite Insurance Co. .... 61	Cherney Communications, Inc. .... 41	Kmart Corp. .... 61	Kmart Corp. .... 61	Perfection Software, Inc. .... 45	Talagan Holdings, Inc. .... 61
Amend, Inc. .... 61	Chervon Corp. .... 57	Leprino Foods .... 82	Leprino Foods .... 82	Philips Electronics .... 105	Tambrands, Inc. .... 16
America Online, Inc. .... 1,2,14	Chervon Information Technology Co. .... 45,51,69	Lotus Development Corp. .... 1,12,45,57	Lotus Development Corp. .... 1,12,45,57	Pioneer Hi-Bred International, Inc. .... 70	Tech-Touch International, Inc. .... 8
American Airlines .... 57,68	Children's Hospital of Philadelphia .... 61	MacroMedia, Inc. .... 61	MacroMedia, Inc. .... 61	Playboy .... 57	Telmanagement Resources International .... 20
American Express Co. .... 57	CIML Corp. .... 57	Marshall & McLennan, Inc. .... 1	Marshall & McLennan, Inc. .... 1	Prime Resource, Inc. .... 57	Texas Instruments, Inc. .... 28,57
American International Group .... 1	Cisco Systems, Inc. .... 2,51,73	Materiale Research Corp. .... 73	Materiale Research Corp. .... 73	Private Mortgage Insurance Co. .... 1	The Acor Group .... 28
AMS Communications .... 8	Compag Computer Corp. .... 28,41,105	MBNA Corp. .... 61	MBNA Corp. .... 61	Progressive Casualty Insurance Co. .... 70	The Data Warehousing Institute .... 45
Apple Computers, Inc. .... 58	Computer Associates International, Inc. .... 6,105	McDonald's Corp. .... 69	McDonald's Corp. .... 69	Puritan Insurance Group .... 105	The Home Depot, Inc. .... 82
Apprize Corp. .... 61	Computer Based Solutions, Inc. .... 61	McDonnell Douglas Aerospace Co. .... 17,51	McDonnell Douglas Aerospace Co. .... 17,51	Purdue Employees Federal Credit Union .... 41	The National Registry .... 41
Artis, Inc. .... 97	Concord Communications, Inc. .... 51	MCI Communications Corp. .... 6,48,49,73	MCI Communications Corp. .... 6,48,49,73	Rad Media, Inc. .... 61	The Okmark Corp. .... 73
AT&T Corp. .... 1,3,6,8,77,77	Coopers & Lybrand .... 45	MD Productions .... 16	MD Productions .... 16	Robert Half International .... 83	The Sabra Corp. .... 57
AT&T Corp. .... 1,3,6,8,77,77	Cord Corp. .... 45	Memorial Sloan-Kettering Cancer Center .... 17	Memorial Sloan-Kettering Cancer Center .... 17	Robinson, Stevens & Co. .... 68	The Tower Group .... 61
Autodesk, Inc. .... 34	Cray Research, Inc. .... 45	Meta Group, Inc. .... 61	Meta Group, Inc. .... 61	RS&D International .... 10	The Washington Post Co. .... 82
Autosoft Data Processing, Inc. .... 8	Cray Research, Inc. .... 45	Microcom, Inc. .... 57	Microcom, Inc. .... 57	SAI, Inc. .... 57	The Yankee Group .... 3,6,14,73
The Bean Co. .... 61	Cybernetics, Inc. .... 45	Microsoft Corp. .... 1,3,8,10,12,20	Microsoft Corp. .... 1,3,8,10,12,20	Sage Research, Inc. .... 20	Time Line Solutions Corp. .... 68
Banc One Corp. .... 61	D.H. Brown Associates, Inc. .... 28	Minet, Inc. .... 24,24,45,48,57,69,73,105	Minet, Inc. .... 24,24,45,48,57,69,73,105	Sales Bank and Trust Co. .... 41	Time Warner Communications .... 8
BankBoston Corp. .... 45	Digital Equipment Corp. .... 4,8,41,58,61,73	Motrola, Inc. .... 28,51	Motrola, Inc. .... 28,51	SAP AG .... 48,61	Time Warner Communications .... 8
Barnett Bank, Inc. .... 61	Distinct Corp. .... 52	Multicare Corp. .... 8	Multicare Corp. .... 8	Sarason Memorial Hospital .... 68	Time Warner Communications .... 8
Bay Networks, Inc. .... 51,73	Dorland International, Inc. .... 45	National Security Council .... 10	National Security Council .... 10	Schor Corp. .... 68	TRW, Inc. .... 57
BBN Planet .... 45	DocuSign, Inc. .... 45	Natural Gas Pipeline Co. .... 57	Natural Gas Pipeline Co. .... 57	Sigma Bank and Trust Co. .... 41	Unicom Pacific Co. .... 41
BelSouth Corp. .... 45	Dream IT .... 14	Naval Postgraduate School .... 77	Naval Postgraduate School .... 77	Sigma Design Imaging Systems, Inc. .... 70	Unicom Pacific Co. .... 41
Bono Consulting .... 82	Dynalco .... 8,3	Nbase Communications, Inc. .... 51	Nbase Communications, Inc. .... 51	Sigma Design Imaging Systems, Inc. .... 70	Unicom Pacific Co. .... 41
Borland International, Inc. .... 45	Easton Vence Management .... 73	Netscape Communications Corp. .... 10,20	Netscape Communications Corp. .... 10,20	Sigma Design Imaging Systems, Inc. .... 70	Unicom Pacific Co. .... 41
Brainstorm Technology, Inc. .... 45	Electronic Data Systems Corp. .... 1,30,41	Northern Telecom Corp. .... 41	Northern Telecom Corp. .... 41	Sigma Design Imaging Systems, Inc. .... 70	Unicom Pacific Co. .... 41
British Telecommunications PLC .... 8	EnterpriseLink Technology Corp. .... 24	Nortel, Inc. .... 30	Nortel, Inc. .... 30	Sigma Design Imaging Systems, Inc. .... 70	Unicom Pacific Co. .... 41
Buckingham Research Group .... 38	Ernst & Young .... 24	Northwest Training Group, Inc. .... 69	Northwest Training Group, Inc. .... 69	Sigma Design Imaging Systems, Inc. .... 70	Unicom Pacific Co. .... 41
Bugatti, Inc. .... 106	Exxon Production .... 24	Northern Telecom Corp. .... 41	Northern Telecom Corp. .... 41	Sigma Design Imaging Systems, Inc. .... 70	Unicom Pacific Co. .... 41
Burlington Coat Factory .... 106	Federal Bureau of Investigation .... 24	Northern Telecom Corp. .... 41	Northern Telecom Corp. .... 41	Sigma Design Imaging Systems, Inc. .... 70	Unicom Pacific Co. .... 41
Warehouse, Inc. .... 4	Federal Bureau of Investigation .... 24	Northern Telecom Corp. .... 41	Northern Telecom Corp. .... 41	Sigma Design Imaging Systems, Inc. .... 70	Unicom Pacific Co. .... 41
Business Research Group .... 73	Federal Bureau of Investigation .... 24	Northern Telecom Corp. .... 41	Northern Telecom Corp. .... 41	Sigma Design Imaging Systems, Inc. .... 70	Unicom Pacific Co. .... 41
Cable & Wireless Communications, Inc. .... 3	Federal Bureau of Investigation .... 24	Northern Telecom Corp. .... 41	Northern Telecom Corp. .... 41	Sigma Design Imaging Systems, Inc. .... 70	Unicom Pacific Co. .... 41
Callnet Systems, Inc. .... 8,73	Federal Bureau of Investigation .... 24	Northern Telecom Corp. .... 41	Northern Telecom Corp. .... 41	Sigma Design Imaging Systems, Inc. .... 70	Unicom Pacific Co. .... 41
Cambridge Technology Partners, Inc. .... 16	Federal Bureau of Investigation .... 24	Northern Telecom Corp. .... 41	Northern Telecom Corp. .... 41	Sigma Design Imaging Systems, Inc. .... 70	Unicom Pacific Co. .... 41

## Netscape releases server beta

By Justin Hibbard

NETSCAPE Communications Corp. this week will release the first public beta of its Enterprise 3.0 World Wide Web server.

The server will include features aimed at improving administration and content management and building multi-tiered applications.

A commercial version will be released as part of the SuiteSpot 3.0 suite of servers, which is scheduled to ship at the end of this quarter. Enterprise Server will cost \$995.

**The content management features in Netscape Web Publisher will take a burden off systems administrators.**

— Becky McDonald, US West

A new Java-based server component, called Netscape Web Publisher, runs inside any Java-enabled browser and provides a tree-based view of documents on the server.

When end users move a document from one directory to another, Netscape Web Publisher can automatically update links in all documents affected.

Becky McDonald, manager of messaging and Web infrastructure at US West, Inc. in Boulder, Colo., said the content-management features will take a burden off systems administrators.

Content management "is very cumbersome today because we have to manage it through the Unix permissions," she said. "And if you publish Web pages on a server stored in a particular directory, everyone with access to that directory has permission to alter the content."

Systems administrators can use Netscape Web Publisher to set permissions for duties such as changing passwords, which will help information systems staffs delegate tasks to end users, McDonald said.

## Year 2000 insurance

CONTINUED FROM PAGE 1

cover losses that arise because of system failures. Those can include in-house programming gaffes or mistakes by third-party business partners.

Gartner Group, Inc. estimates (with a probability of 0.7) that approximately 50% of companies worldwide with date-sensitive code may not become year 2000-compliant in time and will have all or part of their computer systems shut down on or after Jan. 1, 2000.

Under a joint offering, AIG and Minet also provide third-party coverage for directors and officers, such as CEOs and chief information officers, in the event they are sued by shareholders or other affected parties.

Year 2000 insurance "is a great thing to have if you can get it," said Bob Cohen, a vice president at the Information Technology Association of America, an Arlington, Va.-based IT association with 11,000 members. Cohen warns that insurance companies will be selective in granting year 2000 policies. Just as insurance companies are leery of insuring someone's property in a flood plain, insurers "are not going to insure companies that are taking a laissez-faire approach" to year 2000 work, Cohen said.

Whether information systems executives will race to buy year 2000 insurance is an open question.

"We would consider insurance, but our year 2000 planning so far has been pretty rigorous," said Frank Mellon, director of operations at Herman Miller, Inc., an office systems maker in Zeeland, Mich.

M. Lewis Ternes, vice president of information resources at the University of Miami in Coral Gables, Fla., said he is skeptical.

"I would do a cost/benefit analysis and make sure the insurers would be willing and able to cover everything," he said.

Despite guarantees of financial protection — and given their exposure as the year 2000 project leaders — many IS managers seem unconcerned.

"My risk-management director talked to me about the possibility of [year 2000] insurance the other day, but we believe our project is well in hand," said Brad S. Stout, vice president of IS and CIO at Thiokol Corp. in Ogden, Utah.

### KEEP AN EYE OUT

But even companies with the best-laid year 2000 plans could get blindsided by suppliers and other business partners if their off-site systems gag.

The real concern is the "\$50 million outfits who are not focusing as heavily on [year 2000] and don't have the capital to convert their systems," said Jim Jones, managing director of the Information Manage-



Herman Miller's Frank Mellon: "Rigorous" year 2000 planning should be enough to protect the office systems manufacturer

ment Forum, an Atlanta-based group of information technology executives.

Jones said he has talked to some insurance companies that demand that their corporate customers document their year 2000 strategies before the insurers renew policies that protect them against other business liabilities. Jones declined to name those insurers.

Under the Minet/AIG proposal, prospective clients will have to fill out a lengthy application for insurance coverage and document their year 2000 plans. Arthur Andersen & Co. and AIG will review those plans

before accepting a client, said Wendy Baker, senior vice president at Minet Reinsurance in New York, which offers \$100 million policies.

If an organization is considered a good risk, then it might have to pay 50% of the risk from the beginning of the policy to January 2001, Baker said.

If the year 2000 arrives and the insured has no business disruptions, Minet and AIG will return 90% to 95% of the premiums paid out, minus expenses for underwriting costs and other administrative fees, said Dominic Davison-Jenkins, vice president of risk consulting at Minet.

## Infobus architecture

CONTINUED FROM PAGE 1

the chart would update automatically. Windows users can do that by using OLE. The Lotus technology will bring that capability to Java applets.

And because it was designed for the operating system-independent Java environment, Infobus will work on several platforms. Infobus was designed to help developers knit together Lotus' forthcoming Kona applets — lightweight Java-based productivity components — into groupware applications or replace heavy desktop programs.

"Java doesn't solve this problem today," said Jeff Held, a partner in the Center for Tech-

nology Enablement at Ernst & Young. When Java applets can be linked in this way, it will let users dump traditional desktop software suites, Held said.

Lotus previewed the Infobus technology at Lotusphere 97 and demonstrated versions of its Kona applets that will exploit the technology.

### KONA COMING

The Kona applets are slated to be posted on the World Wide Web next month. They will include a spreadsheet, text editor, chart builder, calendar, personal information manager, electronic mail, presentation graphics and project scheduler. But Infobus

will work with any Java applet.

Michael Barnes, a research analyst at Hurwitz Group, Inc. in Newton, Mass., said the architecture will make Notes and Lotus SmartSuite applications more palatable to companies that previously considered the software too expensive and expensive.

### PIECE BY PIECE

Larry Hagerty, head of IS at GTE Data Services in Tampa, Fla., said Notes would easily become more widely used at GTE if he could buy it piecemeal.

"This is definitely heading in the right direction," he said. "The whole Notes environment is overkill, but they have some very nice technology. If they could go down to the component level, and we could plug

and play, we'd pay more attention to it."

Lotus will push Infobus as an industry standard, and it will enter a market already littered with architectures. IBM's cross-platform desktop architecture, OpenDoc, hasn't been able to gain market or mind share in an arena where Microsoft Corp.'s ActiveX and Sun Microsystems, Inc.'s JavaBeans architectures are garnering accolades and revenue.

"OpenDoc is not exactly setting the world on fire, and it's not going to any time soon," Barnes said. "Lotus sees exactly what I see. They're just dealing with reality."

**Users turn to third parties for management tools for Lotus' Domino. Page 45**



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## COMMENTARY

## It makes me WinCE

David Coursey

**F**or the past few weeks, I've been struggling with a Cassiopeia palmtop computer, the first of the new Microsoft Windows CE-based machines to show up at my door. To say the computer has been a disappointment would be an understatement.

Some of the problems are with the machine — this is easily the worst LCD screen I've seen in a while — and some are with Windows CE.

As I wrote last fall when Windows CE was introduced at Comdex, palmtops are a subject of perpetual interest to me. The Holy Grail of personal computing is the ultimate companion machine, a communications and computing tool that fits in your pocket but is powerful enough to do any job.

I dream about a small, wireless E-mail device that is easy to type on, can do simple editing tasks and can run spreadsheets. The Cassiopeia — also sold as the Compaq PC Companion — isn't that device.

I've come close to finding the Grail a few times; Hewlett-Packard has been a

frequent source of promise. But the only device that's held my interest for long is the U.S. Robotics Pilot, and it's more a reference device than a real computer.

If you believe Microsoft, Windows CE is the next big thing in tiny computers. Yes, Windows CE connects easily to a Windows 95 PC. I've even seen a remote-control application that lets your palmtop control your desktop over a dial-up connection or the Internet. There's wireless E-mail and paging for Windows CE machines, and there are perhaps the beginnings of a real third-party applications business.



So I would very much like to be impressed. But lousy screens aside, Windows CE is too much like Windows 95 for its own good. It tries to cram too much on to a small screen. And because it lacks function keys or the dedicated application keys common to tiny machines, Windows CE becomes much too complex for its intended use. Icons that make

sense in color on a big screen lose meaning on a tiny, pixelated, gray-on-silver LCD. Maneuvers that are easy with a mouse become a targeting nightmare when the stylus has to land on a tiny speck of a menu choice.

Where a palmtop is supposed to facilitate finding information on

the run — Pilot excels at this — Windows CE wants you to sit down and stay. It's as though Microsoft can't break away from its desktop mentality long enough to do what's right for any machine that doesn't sport a full-size keyboard and monitor. Nothing about Windows CE strikes me as an engineering or design

compromise intended to help users; any compromises seem forced by the fact that Windows 95 won't run on something so small.

Windows CE really is like a desktop computer shrunk to Lilliputian size, except it doesn't work as well as a desktop. That might be acceptable if you want to spend a few hours writing a novel, balancing the national debt or answering the E-mail that arrived while you were on safari. If you're crazy enough to use the Chiclet keyboard of a Windows CE palmtop for this, you'll get what you deserve.

I'm looking forward to playing with more Windows CE machines. I'm a glutton for punishment, and the Philips Electronics Velo looks interesting. Perhaps if the Cassiopeia had a better screen I'd have liked the operating system more. But for now, Windows CE is way too much like Win 95. If I had to buy a palmtop for someone, I'd get a Psion machine or hold my nose and wait for a Windows CE machine with a better screen.

*Coursey, an analyst and consultant, is editor of "coursey.com," an online newsletter available at [www.coursey.com](http://www.coursey.com). His E-mail address is [david@coursey.com](mailto:david@coursey.com).*

## A well-managed PC beats the NC hands down

Charles Babcock

**N**etwork computers keep appearing in the press as an emerging technology and a new wave of computing. That's interesting, considering that beneath the hood they look an awful lot like stripped-down PCs.

Large vendors such as IBM, Oracle and Sun are doing everything possible to encourage the notion that network computers are different and cheaper — which their CEO customers want to hear as "cheap." It was the resulting business pressure, in my opinion, that led to plans to purchase network computers by 30% of IS managers, as cited in a *Computerworld* survey last November.

But when you look at the specification for network computers, the only thing new about them is they must run Java. Other than that, the specification strips some clutter from today's PCs and settles on a few standards. Hard drives are jettisoned, and networking takes priority.

But today's Windows PC satisfies most of the same standards. The problem with the PC is that it throws in so many other things, including dozens of networking

protocols through network interface cards, rather than being restricted to TCP/IP. Its endless permutations make it more complicated to support.

But there's nothing in the Oracle/IBM/Sun specification that says a Windows PC can't be a network computer, and I can see many Windows PCs running Java by next year and settling in to that role, no questions asked. And they would certainly continue to run Windows.

As the hyperventilated debate goes on, the Windows PC is evolving into something that looks more like a network computer. Because a network computer gets its applications and data from a serv-

er, it's easier to manage centrally. The rap on the unsupervised PC is that it builds up unwanted network traffic and technical support problems, partly because the end user loads it up with software that the IS staff didn't authorize.

But knowledgeable IS managers and network managers are attacking that problem. Kaiser Permanente of Southern



California upgrades each machine's applications from a staging server rather than at the desktop, according to Tom Cornwell, manager of desktop and network services at Kaiser Permanente in Pasadena, Calif.

Deploying application upgrades from central servers slices into the cost of PC ownership. Another firm that does that, Sandia National Labs, estimates it saves \$100 per desktop for an application upgrade, according to Don Daigle, manager of electronic commerce and desktops at Sandia in Albuquerque, N.M.

A network manager at a major airline estimates the company saves \$25 per

desktop for each automatic upgrade but says his site upgrades applications every month. With 3,200 desktops needing upgrades, he figures he saves \$960,000 per year. None of those sites has finished automating management of all their PCs, so the savings will grow.

That also doesn't represent the only cost savings. All three sites inventory their PCs at start-up each day to ascertain what's on them. If an operating system is out of date, it can be upgraded automatically. If a user has loaded games on to his machine, they can be deleted remotely.

Daigle and Cornwell use Novadigm's Enterprise Desktop Manager, a centrally operated systems management package. Similar packages are available through Computer Associates' Unicenter, IBM's Tivoli and Microsoft's BackOffice, although it takes about a year to learn all of them.

So where is it written in stone that a Windows PC can't be managed like a network computer? They can and should be, which means a lot of the cost savings represented by network computers is fluff.

*Babcock is Computerworld's technical editor. His Internet address is [charles\\_babcock@cw.com](mailto:charles_babcock@cw.com).*

# alt.cw

Dispatches & images from the fringes of the electronic frontier

The Back Page

## Digital snafus

The World Wide Web site for the music industry's Grammy awards scooped the Jan. 7 announcement of the nominees, CNN Interactive reported. The nominees were posted at [www.grammy.com](http://www.grammy.com) the night before the official release and then were yanked in the morning when the mistake was discovered.

California Franchise Tax Board computer apparently went berserk in December, resulting in thousands of extra 1996 tax forms being sent to California businesses. A San Diego dentist, for example, received about 16,000 forms, the Associated Press reported.

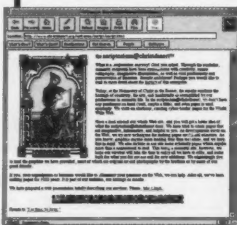
Hundreds of would-be surfers trying to dial in to America Online ended up calling Royal Anderson's home phone in Cleveland, the Associated Press reported. His number is one digit different from an AOL access line. "I get so many calls, I have to turn my phone off at night because I can't get any sleep," Anderson said.



Does your belt-high pager bind when you sit? The Beep-er Keeper from Bugatti, Inc. in Boston is a leather holster that drops the pager a few inches below the waist. It costs \$11.95.

## THESE SCRIBES DO HTML

For 1,500 years, monks have created ornate calligraphy and illumination for great books. Now, monks at the



Monastery of Christ in the Desert, near Abiquiu, N.M., have modernized the concept by going into business as Web site designers. The monastery's

site ([www.christdesert.org](http://www.christdesert.org)) has examples of their commercial work and a guided tour by "Brother URL."

## Digital archives



### TEN YEARS AGO (FEBRUARY 1987)

- Headline: "Users skeptical about ISDN benefits, support."
- Headline: "LAN version of SuperCalc4 out."
- The National Rifle Association opposes the Brady Bill for computerized background checks of gun buyers.
- Headline: "Creative cures for PC phobia."
- Texas Instruments introduces the first 32-bit chip developed for artificial intelligence applications.

- Headline: "Referential integrity eludes DB2."

### TWENTY YEARS AGO (FEBRUARY 1977)

- Apple Computer moves from Steve Jobs' garage to an office in Cupertino, Calif.
- Partners Bill Gates and Paul Allen sign an agreement to officially create Microsoft.

Send your alt.cw contributions to [mbetts@cw.com](mailto:mbetts@cw.com). If your item is used, you'll receive a cool T-shirt.

## Inside Lines

### Dog days at Silicon Graphics

Unix workstation vendor Silicon Graphics may be getting chased by Intel hounds but at least it hasn't lost its sense of humor. At the company's launch last week of its high-performance Octane workstations, CEO Ed McCracken described Intel workstations as ordinary PCs with graphics cards in them. "If you strap a rocket on a basset hound, it's still a dog with a rocket on its back." And then, warming to the theme, he said, "If you put a roof rack on a Pinto, it doesn't make a Range Rover." We hear you Ed, we hear you!

### Hey, she's got great... technology

We're sure that's why IS managers are surfing to the "Beautiful Girls of Inxv 96" World Wide Web site at [www.ceeds.com/bgo/index.htm](http://www.ceeds.com/bgo/index.htm). A group called Central and East European Digital Sensations is holding an online beauty contest that features booth hostesses from Central Europe's largest information technology expo. The show was in October in the Czech Republic. Twelve contestants are showing off their wares with 60 splashy photos. Of course, personality counts, so they're also listing those ever important vital statistics—age, height, weight and measurements. And because bandwidth isn't everything, they also list their deep thoughts on IT. What's next? The Men of IT pageant?

### The lighter side of Charles Wang

Computer Associates CEO Charles Wang was in the middle of an interview after last week's CA-Unicenter TNG announcement at the St. Regis Hotel in New York, when the phone on the table in front of him rang. He picked it up. The voice on other end asked whether she had reached the hotel's sales and catering department. Wang deadpanned: "Why? Are you hungry? Do you want to eat?" Then he good-naturedly informed the caller she had reached the wrong number. He then hung up and picked up the interview where it had left off.

### EDS loosens up dress code

IBM abandoned its blue-suit dress code years ago, and high-tech firms have taken casual business attire to new heights. But Electronic Data Systems has remained a bastion of formality since it was founded by Ross Perot. In an effort to catch up with changing styles, EDS headquarters in Plano, Texas, recently relaxed its Professional Appearance Policy for some 39,000 female workers worldwide. They are now allowed to wear tailored trousers with coordinated jackets. In other words, EDS has discovered pantsuits.

### Show me the money

After a year and a half, Lotus' relationship with parent company IBM can still be summed up by the phrase "Show me the money." At Lotusphere 97 this week in Orlando, IBM Chairman Louis V. Gerstner wore an IBM blue suit and tie, with Lotus executives watching in their casual polo shirts and sweaters. He said he was out of uniform for the event, mainly because he had to return to New York afterward to convince bankers there to loan Lotus more money.

### Capacity planning stumps Lotusphere organizers

Lotusphere was sold out, with 10,000 attendees. But attendees suffered through a rash of closed sessions because of overcrowding. One attendee noted on the show's Notes discussion group that maybe Lotus should pay as much attention to planning Lotusphere session capacity as it does to planning Notes/Domino capacity.

We hear Octel Communications later this month will announce Unified Messenger, technology that lets users access E-mail and voice mail from one source. For instance, users would be able to check electronic mail and voice mail from the phone, and they would be able to get voice mails delivered to their messaging in-boxes. Microsoft will be part of the rollout; it announced plans to team up with Octel to add support for Unified Messenger in its Exchange messaging server. News editor Patricia Keefe doesn't care if you send her voice messages or E-mail as long as you keep those news tips coming. You can call her at (508) 820-8130 or send E-mail to [patricia\\_keefe@computerworld.com](mailto:patricia_keefe@computerworld.com).

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